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...e of New York Conservation Department

P.M. KRUETZFELDT

The Limit

Fresh snow gleams white on the hillside, lies deep between the spruces in the forest. The streams run black and cold along banks piled high with jumbled ice. The calendar says April 1; counts the Spring ten days old. Robins lured north by the promise of nests and fat, juicy worms perch hunch-backed and disconsolate on the snowdrift outside the window.

Yes, this is April Fool's Day and just by chance—and the law—it happens to be the first day of trout season, too. An appropriate coincidence, we think, for in the chill gray of this dawn, thousands upon thousands of New Yorkers who normally go about their business of tending store, pumping gasoline, ministering to the sick, hanging wallpaper, selling insurance, pruning apple orchards, embalming the deceased and running banks fumbled in the darkness to turn off alarm clocks, crawled out of warm beds, collected "long-Johns," wool socks, sweaters, jackets, hip-boots, thermos bottles of coffee plus fishing gear and joined the taillight cavalcade to inaugurate a new trout season on the Beaverkill, the Esopus, the Willowemoc, the Schoharie, the East Branch, on Catherine Creek, the Wiscoy, the Little Conewango; on all the streams where tradition insists the hardy shall congregate to pit their luck and skill with stiff lines and ice-clogged guides against the benumbed and bewildered trout —opening day!

A new season is under way. From this day forward, through the year, sportsmen will take up again the traditional challenge, the pursuit of the Holy Grail for fishermen and hunters everywhere—*the limit*. There's no doubt about it, this is the badge of distinction, the mark of success of our modern-day sportsmen.

And, of course, it doesn't make the slightest difference what the limit is, just so it's filled. Today it's trout so the angler must creel ten, unless, of course, it's between the Junction Pool and East Branch on the Beaverkill —there the ego will be sated with five. Why? Because that's the limit! Or take black bass, six will do it, unless you are one of seven aboard a boat on Lake Ontario off Henderson Harbor. You're all through there when your party has boated 24 bass, but your smile is just as broad; you have taken the limit!

Just how did we get started on this psychological rat race, anyway? Quite simply. Limits for fish and game came into being as one of the conservation measures adopted to more equitably stretch a limited supply to meet increased demand. When fishermen and hunters become more numerous than the fish and game they seek, then there's good logic for limits—when logically applied.

But just where, how and why we, as sportsmen, lost sight of the end and substituted in its stead, the means as the ultimate measure of a successful day afield, we're unable to say. If you want our opinion, though—*it's the limit!*—Editor

The New York State

Conservationist

APRIL-MAY, 1959

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In New York State there are 11 million acres of privately-owned forest lands—more than 75 per cent in small wood lot stands. From these wood lots, each year, comes a major share of the 165 million cubic feet of New York's annual wood products harvest. Foresters know that this harvest could be greater, of better quality and produce increased income for the owners; know these objectives must be met, soon!

Here, specialists from the College of Forestry at Syracuse and Cornell University review the problem and suggest solutions.

If you own a farm with a wood lot, if you are thinking of "buying a place up in the country," or if you are simply interested in the best use of our natural resources—this is for you.—Editor

SINCE most of the readers of THE CONSERVATIONIST are outdoor enthusiasts, I would like to explore your thoughts on what you, as an individual, see while tramping through the fields and forests and what you look for while casting a fly or what you observe while being homeward bound from a day in the out of doors. Is it the signs of wildlife, the sparkling waters of a fast running stream, the deep quiet pool where the "old one" still lurks, the song of the lark, the abundance of wildflowers in August, the glamour of color in the Fall? These are the beautiful wonders of Nature and all of us thrill to their call. But, I often wonder how many of us take just a fleeting moment to seriously reflect upon the many things which the forests give us beyond the pleasures we enjoy so much. Look at your gun stock, read the map which helped you get there, the skiis you used last Winter for smoothly zooming down those snow-covered slopes, the newspaper you read today! Not to mention the obvious—the house you live in! Yes, the forests give us these things, too. Now may I suggest that the next time you enter the woods, you take five minutes and look closely at the condition of our woodlands. Do you see evidence of insects, disease and decay? Are the trees straight and tall? Do you think they are large enough to be harvested and made into lumber? What about the young growth coming along? Is it there? I am afraid that what you will see in many places will be most disappointing from these points of view.

In previous articles we have mentioned the very fine study made by the U. S. Forest Service on our national timber resources. The report shows that more than half of the nation's commercial forest land is owned by 4½ million farm and other small forest property owners. The survey also shows (*and this is most important*) that by the year 2000, timber production must be doubled if this country is to meet the demands of its expanding population. Many foresters, looking to the problems ahead, feel that the best forestry opportunities lie with the small forest ownerships—the wood lots. In New York State we have about 238 thousand of these small wood lots (100 acres or less) and they add up to more than six million acres of commercial forest land.

As foresters across the country studied this revelationary report, it became clear to all that some real planning was in order to increase timber production on small forests, to put the wood lot on a productive and sustained yield basis.

With the U. S. Forest Service and various state foresters taking the initiative, a series of nationwide meetings were called to discuss ways and means to reach this goal. From the national level we have been informed that some 5,000 people attended these regional meetings called by the U. S. Forest Service. Of the people attending, 40 per cent were small woodland owners. The others were representatives of various industries, bankers, insurance men, lawyers, state and federal officials and others interested in increasing timber production.

State Meetings

In preparation for these regional meetings, state foresters held preliminary meetings in their districts to obtain the grass roots attitude of the local landowners. Here in New York, a series of 14 such gatherings were held by the various District Forest Practice Boards and their findings were summarized at a combined Conservation Department-State Forest Practice Board meeting held at Potsdam, on August 21, 1958. The discussion was channeled into six broad fields, each prefaced by introductory papers presented by leading forestry educators from the College of Forestry at Syracuse and from Cornell University in Ithaca. These papers were intended to be provocative; to scout the problem in each case; to stimulate discussion and thereby to work toward solutions. While it is impossible to cite them here, in full, summaries can be made and will be helpful to the reader in assessing the scope and importance of the over-all problem.

Forest Taxation

The first paper covering the areas of forest taxation, insurance and credit was presented by Neil J. Stout, Research Assistant, Department of Forest Economics, College of Forestry at Syracuse. Professor Stout said: "A few days ago, I was talking about taxation with a Finnish forester, and he told me that through taxation, their management of private woodlands has actually been improved. The idea was new to me and I wondered just how this could be done. His explanation ran like this: Forest taxes are based upon the average productive potential of the land under good practices. They use a system of zoning which recognizes the variations in soils, growing season, drainage, location with respect to markets and the like.

"The important and significant effect of this plan is that it favors the owner of well managed forest land with a stable tax, low in relationship to annual yield. Owners of carelessly handled forests on similar land are penalized for they would be deriving less revenue and yet paying the same taxes. As he explained, these woodland owners are induced to care for their timberlands and improve the yields so that they can have more money left after paying taxes. Records show that during the more than two decades under this tax system, average yields per acre have greatly increased. I cite this example because our future hopes and goals in the effective management of small private wood lots are virtually those being attained in Finland. . . .

"Now let's look briefly at New York's general property tax on forests. The general property tax you will recall, is a direct annual tax based upon the assesed value of real property. This is what we call the *ad valorem* tax . . . Opinions have been expressed by many

Hauling logs out to a typical wood lot sawmill

that ad valorem taxes are a major cause of the heavy over cutting on small private forest lands. They reason that the tax levied on the assessed value of forest property, requires annual payments while timber sales bring income only at odd intervals.

"The small private owner is faced with many problems. He needs money to pay taxes and for other spending and is forced to liquidate timber frequently to satisfy these pressing demands. These are the reasons why he cuts contrary to the best public interest.

"Changes in the forest tax system so that taxes would be more of a levy on the income from the wood lot or, better yet, income earning capacity would help eliminate inequities and favor the buildup of the forest growing stock."

"In what direction are we now headed?" Professor Stout asked. "It is my understanding that the principal taxation body in New York, the State Board of Equalization and Assessment, is giving considerable attention to certain forest land tax improvements. Although their present emphasis is in the extensively forested zones of our State, it may pay us to take note for the sake of the small forest owner.

"The changes are directed at refining the ad valorem approach to eliminate parcel bias or unfair assessment of some tracts. As you know, the tax law of New York specifies that all property shall be assessed at full value. A detailed assessor manual will be produced to guide local assessors to check the value of standing timber on each acre of land. The preparation takes into account such factors as volume, species, distance from road and roughness of terrain, but with little or no regard for productivity. With this taxation plan in operation, assessed value of timber will range from a few dollars to nearly $400 per acre, with the holder of heavy volumes of timber paying heavy taxes and the owner of cut over stands largely excused from the payment of taxes. Don't you suppose that if this modernized system were adopted for New York State as a whole, small woodland owners might in many cases consider it advantageous to cut their stands merely to reduce taxes? It seems to me that an ad valorem tax, when administered in the strict sense, would favor forest depletion rather than conservation."

Forest Insurance

Professor Stout then turned to the subject of forest insurance and forest credit.

"Forest insurance and forest credit are close relatives," he said. "Both have been retarded in their development. The insurance principle of spreading losses among a large number of policy holders seems adaptable to forestry. Professional foresters have long recognized the need for suitable insurance coverage, yet commercial insurance underwriters have been slow in responding even after several pump-priming attempts by government agencies. Insurance people contend that the risks are still too great, despite much improved fire protection.

"Forest credit remains another unsolved problem in our forest economy. The needs have been repeatedly stated and although there is not complete agreement, it is generally felt that credit would aid private forestry in a number of ways. It could (1) make possible the holding of immature stands until they are partially mature; (2) provide funds for cultural operations to improve quality and value of the yield; (3) make possible the consolidation of separate holdings into effcient operating units.

The Credit Picture

"The credit situation of the small scale forest farmer is particularly hard to solve. Rates on loans are high because the cut over wood lot does not constitute good collateral. Many owners shun the very idea of credit for they dread the thought of being in debt.

"It seems likely to me that any improvements in the availability of insurance and long term, low cost credit as well as modification of forest taxation would be needed in conjunction with other measures, in order to secure better management . . ."

Professor Stout's subject elicited considerable comment at regional meetings —among them, these:

Manufacturer (Northeast): "This problem of taxes has been explored, flogged and beaten as a subject over all the years that I have been connected with land ownership, yet today it is more of a problem than it has ever been . . . In my opinion, it is the chief basic cause for the bulk of poor forest practices on small ownerships."

Consultant (Northeast): "Excessive and uncertain property tax is a real deterrent . . ."

Economist (Middle Atlantic): "The tax structure in most states is actually a hindrance to forest conservation . . ."

Layman (Middle Atlantic): "Anytime you reduce the tax on one person you are going to have to increase it on somebody else. I say as an individual I am against the yield tax . . . It is in my opinion a waste of time to consider reducing taxes on timberland."

Industrial Association (Mid-South): "The effect of forest property tax on management practice is probably overemphasized. In several states where legislation has given the owner a choice of taxation . . . there has been no general rush to accept the latter, nor has there been . . . a noticeable improvement in forestry practices on the part of those property owners who have changed."

Indusrtial Association (Northeast): "Private insurance should be promoted by industry. Industry should cover its own lands and endorse sound programs for small woodland owners."

Public Forester (Northeast): "Lack of insurance is hindrance to obtaining credit. Need . . . must be sold to the underwriters."

Economist (Middle Atlantic): "It cannot be claimed that there is no demand for forest insurance. There is a real need for this kind of insurance."

Educator (Northeast): "It is generally felt that credit would aid private forestry."

Economist (Middle Atlantic): "The small forest owner may be confronted by a variety of circumstances where the use of credit would be to his advantage."

Industrial Association (Middle Atlantic): "Credit programs should be available for all forestry operations in which credit can be used constructively, with terms which will require or encourage good forest management with reasonable prospect of repayment."

Industrial Association (Mid-South): "Credit alone will not solve the problem of low production and poor returns on these small holdings . . ."

Forestry Education

The second conference topic considered the optimum size of the small forest tract as an economic unit. It was introduced by Prof. Lawrence S. Hamilton of Cornell University. He stated that "wood lots smaller than 500 acres cannot yield . . . a sustained income of sufficient amount to support even one individual. Small woodlands will produce only supplemental income as part of some other enterprise."

"When discussing the problem of the small forest holding," he said, "I urge that we clarify our objective; namely, what is the public interest in these holdings? I personally believe that the paramount interest in New York at least, is not in increased productivity to meet wood consumption. Rather, I believe, it is to increase the economic and personal well-being of this segment of our citizenry; to maintain natural resources in private ownership where possible; to keep government controls to a minimum, yet use government investment and policy to provide increased opportunity for private development . . . In making the small holding better serve the economic interests of the owner, size alone seems to matter less than many other things such as market availability and quality of growing stock . . . Guidance in determining best use, outputs and inputs means the application of technical and managerial skills to these forests. For wood lots producing income from forest products, these skills at least initially must come from a forester. But foresters, either public or private, must re-orient their thinking and concern themselves with the whole enterprise of the owner, including his alternative investment opportunity, need for income, wildlife and aesthetic values. This is enterprise planning and we have not been doing it . . . Since each case is different and personal contact is required, it means a tremendous increase in the availability of forestry service . . . Forest Practice Act Foresters, private consultants and industrial foresters . . . Even if we relegate public management assistance to ownerships of less than 100 acres, it is obvious that in our 28-forester, Forest Practice Act Program, we are merely toying with the problem . . .

"I believe that an additional re-orientation is in order when dealing with the farm ownership group. Here we have a group attempting to apply labor to various land enterprises where they can earn the best net return per hour . . . We have enough records from farm woods operations to show that if markets exist and if the woods have not been crippled by previous cutting, the returns per hour from work in the woods can surpass that of many other agricultural endeavors . . . Foresters should make the farm wood lot owner aware of the possibilities for incorporating woods work into farm management . . ."

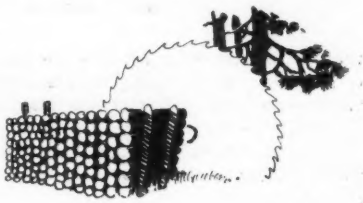
Professor Hamilton believes that the small wood lot (less than 500 acres) is not a logical management unit, if we look upon it as a sole source for sustained income, but is important as an additional or supplemental source of income. Now, let's look at a few comments which were made at some of the regional meetings:

Consultant (Northeast): "These little forest tracts—thousands of them—are owned by people who are not interested in them for economic reasons . . . Further effort should be made to consolidate ownerships into larger units . . ."

Educator (Northeast): "Group action can help by capturing markets which are otherwise not available to small, diverse ownerships; by bringing increased returns to the landowner and by getting technical service into the woods."

Economist (Middle Atlantic): "Many small holdings are in sufficiently close proximity to large areas of state and national forests, other publicly-owned areas, and to major industrial holdings to justify a system of lease or other working agreement with small or private owners in order to permit them [to be] economic units of timber production."

Industrial Forester (Northeast): "The owners themselves, might be encouraged to solve their problems by forming an association or co-operative type of organization to harvest and market their forest products, plant trees, do timber stand improvement work and fight fires."



Wood Lot Economy

The third area which was discussed dealt with educating and training small woodland owners in forest management methods and their application. This subject was introduced by Floyd Carlson, Associate Professor of Forest Extension, College of Forestry, Syracuse University. Professor Carlson has had 28 years of experience in the field of forest extension work and has acquired a keen knowledge of the condition of New York's forested lands and the attitudes of many, many landowners. Against this background of training and experience, Professor Carlson called attention to three personal observations:

"1. That 75 per cent or more of the citizens of New York State will vote for and give sustained support to an enlarged and improved forestry program for commercial forest land, including the wood lot, *provided* this program is clearly outlined for their understanding.

"2. That the majority of woodland owners are ready to accept improved forestry practices.

"3. That at this time any stepped up programs of 'Forestry Education for the Wood lot Owner' will be a waste of the taxpayers' money *unless* it can be accompanied by a marked increase of professional forestry field service available

through the public forestry agencies of this State."

"I want to make myself unmistakedly clear," he said. "I answer the question: 'Are our education and information programs adequate?' with an emphatic *no!* I believe in an improved educational program for the wood lot owner. I also believe that it is sheer stupidity, if not a certain kind of insidious knavery to blindly recommend intensifying our education program for the wood lot owner without recognizing and planning effectively for the consequences of such educational effort." He then said: "This brings us to a key consideration—what about the adequacy of the forestry service available to the wood lot owners of New York State? Let us face this fact—the lack of professional foresters and forestry service in New York State is *the* bottleneck holding back the improved management of forest lands on thousands of acres . . . It seems to me it's about time that we put aside both our timidity and our ineptness in calling for this expanded forestry service. It would be my suggestion that to come near to meeting forestry services which will be required at first with regard to an expanded education program for the wood lot owner, that we start with a request for 30 new [additional] Forest Practice Foresters to work out of the Forest Practice District offices.

"My last point, before I bounce the ball to you for further action, is based upon the opinion that to compete with our neighbors in other forested states, we can no longer afford to have any prima donnas in the field of public forest education for the wood lot owner. In my opinion our real strength will be demonstrated only when we plan and carry out a unified public forestry educational program—a program in which priorities are agreed upon, methods outlined for obtaining the objectives and the agency or group selected for carrying out a particular project based upon their ability and resources to carry out a particular project . . ."

This topic on forest education and training aroused considerable interest and many diversified approaches to this problem were suggested at the regional meetings. Let us look at a few:

Consultant (Northeast): "Eliminate subsidies and spend the money on education, demonstrations and supplying information to woodland owners."

Layman (Northeast): "We must continue to stress at all educational levels, conservation education, the understanding of and the respect for our natural resources."

Public Forester (Northeast): "We urgently need several additional trained and experienced foresters to give 'grass roots' information and co-operation on forest management. The extension forester . . . is also urgently in need of technical assistance . . ."

Layman (Northeast): "I suggest that states of the Northeast select in each county . . . an area, privately-operated and managed, to be a demonstration area for other people to see . . ."

Consultant (Middle Atlantic): "We have to get out and do some leg work, or whatever it is, and acquaint these men and bring them in and show them what can be done and what should be done with their land."

Manufacturer (Mid-South): "We should also study and publicize the potential markets for the products of our forests . . . All existing agencies should co-ordinate in an intensive educational program calling attention of the small forest landowners that good management is not only an investment in the future, but it will immediately increase the value of their property . . ."

Wood Lot Management

Following the discussion on education, George R. Armstrong, Research Associate, Forestry Economics, College of Forestry, Syracuse, introduced the group to the topic dealing with incentives, markets and utilization. Professor Armstrong reviewed the ownership pattern and then proceeded to discuss the management picture:

"Estimates of the effectiveness of management in the nation's forests made in the Timber Resources Review are apparently based on three measures. Two of these, planting and protection from fire, are of relatively small significance in the study, and besides New York rates fairly high in these categories. The most important measure used is the productivity of cut over lands. Essentially, it is a combined estimate of the existing and prospective stocking, species composition and relation of felling age to stand maturity. The higher the productivity index the better the chances for higher timber production in the future. . . . Statistics for the Middle Atlantic States (and I think we are safe in assuming them representative of the New York situation) show productivity of recent cut overs on farms, although not exceptionally high, to be the best in the nation. Contrarily, productivity of recent cut overs in other private (non-industrial) owners is worse than average. This suggests once again that it is the non-farmer owner who deserves a large share of our attention . . . But even more important, we can see that this measure of productivity which has been the accepted basis for the strong statements made about the unhealthy condition of the small private wood lot, is centered *not around management practices in general but around a particular practice; namely, harvesting.*

Harvesting Practices

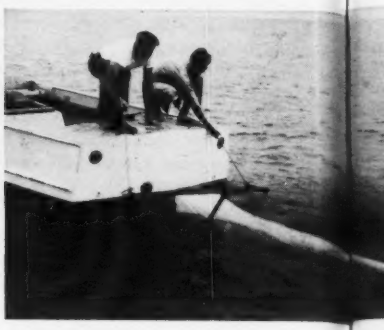
"One conclusion that could be drawn from these data is that to get at the heart of the small wood lot problem here in this State we need a concerted attempt to improve harvesting practices, with special emphasis on non-farm ownership and in wood lots largely within the size range 30 to 500 acres. Now suppose we directed our attentions along such lines. We would suddenly find ourselves primarily concerned with marketing problems. Furthermore, we would be dealing to a large extent with doctors, lawyers, merchants, and retired people and the like who, compared with farmers, would probably represent a far higher percentage of absenteeism, a more limited ability to understand or to engage in woods work, less appreciation of physical conditions in the wood lot, less time to spend in the wood lot, an extremely wide range of income and monetary health, and what may be most important of all, stronger individual biases in favor of the non-timber values of the forest—wildlife, recreation, preservation.

"With all this in mind, let's consider the first of our subjects for discussion in this hour—direct incentives. These incentives may be positive or negative. The philosophy may be let us help you do this or do this, or else. We can think of examples of both. At least four states that I know of have compulsory private management laws.

"Here at home we are presently thinking positively. We have the Forest Practice Act, Soil Conservation Service program, A.C.P. payments, the programs of other public agencies like the colleges, plus those of a number of private firms. All are directed toward subsidization of management practices. But the practices themselves run the gamut from stock taking (including inventories, planning, mapping) through protection, planting, cutting, logging and all the way to marketing. This is good.

(*Continued on page* 32)

Cornell's Shackelton Point property ... home of the University's Biological Field Station on Oneida Lake.



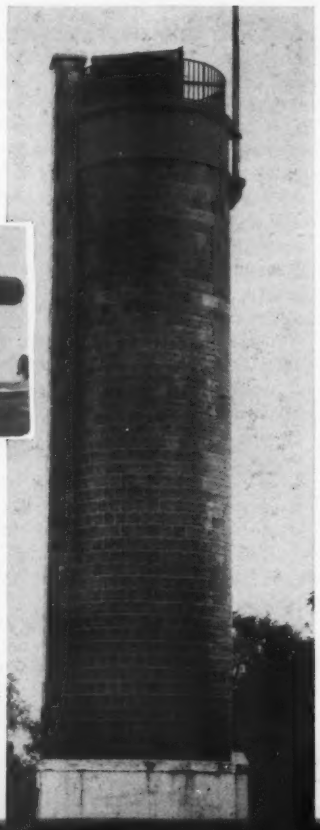
by Nick Drahos

What's Going On At Oneida Lake?

Research Biologists Probe For Answers In One Of New York's Most Productive Lakes

Biologists follow up count by direct contact with fishermen—record area fished, kind of fish taken, number, size, etc.; take scale samples of any pike perch, bass and yellow perch in the catch; check to see if tagged or fin clipped.

Electric shocker rig used to stun pike perch and bass long enough to weigh, measure and tag.



One of the landmarks on the lake is this 70 foot, silo-like tower on Shackleton Point. Fisheries biologists using a 30 power telescope scan the lake from on top; make a fishing boat count three times each day and twice each night, weather permitting. The Conservation Department 'plane is used also to check fishing pressure.

Far above Cayuga's Waters is famous as Cornell's Alma Mater—famous—but not quite accurate, for not all of present-day Cornell overlooks this beautiful Finger Lake. Among the Cornell "sprouts" to grow in further pastures is the new biological field station on the shores of Oneida (rather than Cayuga) Lake. This welcome addition is located three miles northeast of Bridgeport at Shackelton Point, some 65 miles north of the main campus at Ithaca. The 400-acre site, with about forty buildings and one and a half miles of Oneida Lake shoreline, was donated to the University by Mr. and Mrs. Charles E. Brown with the understanding that it be used for educational purposes.

Cornell gladly accepted both — the property and the challenge—and promptly converted the area into a biological field station for the University, under the supervision of Professor Gustav A. Swanson, Head of Cornell's Department of Conservation. The station is available for use by any of the biological departments of the University, as opportunity and need may arise. Eventually, it is hoped that the station will become a full-time

A typical sampling of young fish seined near shore in Oneida Lake. Note perch and bass fingerlings in net and walleyed pike fry (in hand).

Plankton-fry trawl is towed at Oneida Lake to collect walleye and smallmouth bass fry. Later, the abundance of natural food is correlated with the size, distribution and abundance of these small game fish. Stomach analysis of the fry is made too.

The mending and tending of lines, anchors, buoys and nets is a painstaking but essential part of the job.

This public boat launching site at Shackelton Point is one of three constructed by the Conservation Department on Oneida Lake. Others are at Godfrey Point and at Phillips Point on the north shore.

Summer biological school; complete with laboratories, classrooms, student dormatories and storage facilities.

Even now, various departments of the University are busily engaged in research—laying the groundwork for some of the planned Summer course work there. Surveys on soils, plants, lichens, vertebrates, mollusks and much fisheries research work have already been done or are in progress.

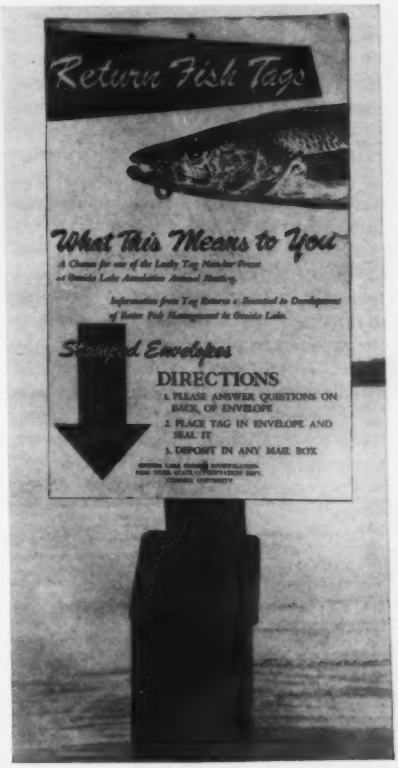
The fisheries studies being conducted are part of the Oneida Lake Fishery Investigation under the supervision of Dr. John L. Forney, Research Associate, and Dr. A. W. Eipper, Project Leader under the D-J Federal Aid Program. The investigation was initiated in April, 1956 by the New York State Conservation Department and the U. S. Fish & Wildlife Service, with Cornell handling it on a contract basis. Object of the study is to develop, through research, management of the fisheries of Oneida Lake to provide the best possible year 'round fishing on this popular and biggest inland lake of the State.

On the land improvement side of the picture, Paul Laible, the station superintendent, raises agricultural crops for Winter wildlife use. In the Fall, Paul operates a successful live-trapping and banding station for waterfowl.

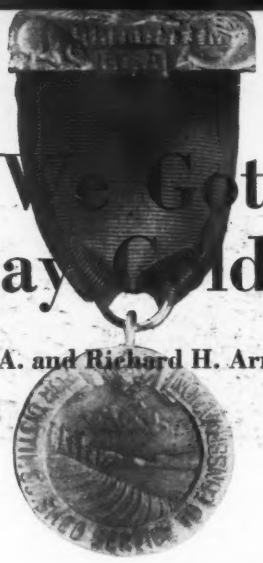
Cornell's foresters have been busy on the property, too. They've planted an experimental plot of a fast growing Carolina hybrid poplar and are making a study of growth and fiber characteristics of this species for possible future paper pulp use. Along with this are older study plots of poplar and ornamental evergreens, planted some twenty years ago by the area's donor, Mr. Brown.

The New York State Conservation Department has also helped to improve the land picture. In co-operation with Cornell, the Department has developed a one-acre farm pond and built a much needed public boat launching site a little north of Shackelton Point itself. Plans for other farm ponds and wildlife marshes are in the making.

That's the story in a nutshell. All indications point to the fact that the various departments at Cornell are going full blast to make this an outstanding research and teaching area — one of the best, we hope.


Return Fish Tags
What This Means to You
DIRECTIONS
1. PLEASE ANSWER QUESTIONS ON BACK OF ENVELOPE
2. PLACE TAG IN ENVELOPE AND SEAL IT
3. DEPOSIT IN ANY MAIL BOX

Posters like this are on display and return envelopes available for fishermen at boat liveries around the lake and at the Department's public boat launching sites. Fish marking studies enabled biologists to come up with an estimate of the number of legal-size pike perch over-wintering '57-'58 in Oneida Lake—225,000.



How We Got The Hornaday Gold Medal

by David A. and Richard H. Armstrong

THE Boy Scouts of America make several awards in the area of conservation. The most highly prized of these, and that hardest to achieve is the Hornaday Gold Medal. This is given in co-operation with the New York Zoological Society in memory of William T. Hornaday. Very few such medals are given in any single year; in fact, in the history of Scouting only 81 have been awarded. This should be compared with the 203 Hornaday Badges given, because only those whose work has first been awarded the badge can be considered for the gold medal.

Two gold medals, at the same time, to one family, for a set of twins, is unusual; in fact, quite unique. The story of how this came about owes much to the program of conservation in New York State. This it is the purpose of this article to describe. We became interested in Scouting, starting as Cubs, and going on to Boy Scouts; currently we are Explorer Scouts in Post 350 of the Old New York District of the Manhattan Council.

In our work in conservation, we started off with one big advantage—our father had studied under William T. Hornaday and Ernest Thompson Seton and was thoroughly versed in the fundamentals of this field. While we have had other counsellors and advisors on conservation, such as Scouters, county agents, game wardens, and district soil conservationists, our best guidance and help came from our father. His idea of conservation is bigger than soil and water, fish and wildlife, forest management, good manners in the woods, etc., which is the usual conception of conservation. Dad's idea is that conservation is an all-embracing term which includes (in addition to those already listed) our basic natural resources, our pool of science talent in youth, conservation of human life against disease, traffic and industrial accidents, and such related items of importance.

We had not been in Scouting long before we realized that it is concerned with conservation. As we progressed through Star, Life and Eagle Scout, we did a great many conservation projects. We learned about the Hornaday program in the Boy Scout Handbook while we were Second Class Scouts and began, even then, to think about working for this top honor.

Scouts like to work with water, build dams, divert streams and we had a lot of fun working out stream improvement projects. But work with Scouts is variable in quality. Some of it is good, while some is a sheer waste of time and effort. So much depends upon the leadership and the program. When we realized this we knew we needed some kind of conservation training and experience under experts in the field. But we were city boys and where to get this was a real problem. We sent postcards to departments of conservation in all states surrounding New York. Lo and behold, what we were seeking elsewhere we discovered, was available right in our own State!

The DeBruce Conservation Camp operated by the New York Conservation Department and located in the Catskill Mountains at Livingston Manor was the one to which boys from our part of the State could apply. We were accepted and each of us spent a week at DeBruce during August of 1956. There was only one thing about the camp we would criticize. It had no swimming facilities and we missed this, for swimming has always been one of our major summertime activities. However, the remainder of the program more than made up for this. Among other things, we learned the fundamentals of hunting, fishing, and trapping. We participated in conservation activities, including visits to hatcheries, observing fish shocking techniques, learning about contour plowing fundamentals, and about tree diseases. This was amazing to us! Here we could get all this concentrated information from experts in each particular field.

We studied forestry, learned the various techniques of dealing with reforestation, tree farming, use of trees as soil and water conservation measures and we participated in the variety of techniques of modern forest fire fighting. We worked on stream improvement projects, we studied ecology (a word we had never heard before). We learned the fundamentals of hunter safety, practiced rifle shooting daily, and earned the coveted Hunter Safety Award; this made us eligible under the Conservation Law to secure our first hunting licenses in New York.

One particular part of the program at DeBruce made a deep impression upon us. The evening before was devoted to the showing of films related to the program of the following day. This gave us a briefing of what was coming next on the schedule and offered some pointers on what to watch for the next day. Nor did the staff leave out any part of the announced program, but covered the pre-planned program in a comprehensive manner. We felt we were getting the full measure of education, recreation and conservation fundamentals because somebody with foresight had planned it that way.

The accommodations we had at DeBruce were much better than those available at any other camps we have ever stayed at, with the exception of our Scout encampments on military bases. The bunks were comfortable—but we would have slept anyway because the program kept us so busy doing

Each year, the Conservation Department offers sportsmen and other civic groups throughout the State the opportunity to send teen-age boys in their communities to one of its four conservation camps. At these camps, attended annually by some 1,600 boys under the supervision of qualified camp directors and counsellors, the fundamentals of soil, water, forest and wildlife conservation are taught by Department specialists in each field. Instruction includes forest-woodlot management, reforestation, stream improvement, fish management and fur, waterfowl and other aspects of game management.

Added attractions are fly-fishing and fly-tying instruction, woods lore, camping and firearms safety instruction.

In the accompanying article, two city boys tell of their experiences at one of these camps and how they profited thereby to each win the most coveted award in conservation offered by the Boy Scouts of America in co-operation with the New York Zoological Society.—Editor

worthwhile things we were bound to get tired. The food was just out of this world. Even now, several years later, we remember the fine meals we had in that lovely dining hall at DeBruce.

The men who gave us our training were conservationists through and through. This was not just a job they were doing while waiting for something else to come along which they might like better. The men who inspired us with the significance of conservation were doing this kind of work because they are career men who love this work and probably are happier at it than at anything else they might try. The counsellors were young men from the forestry schools or studying in fields related to conservation. They too were dedicated individuals who always had time to talk to a boy, to answer his questions, to be helpful in setting him on the right track.

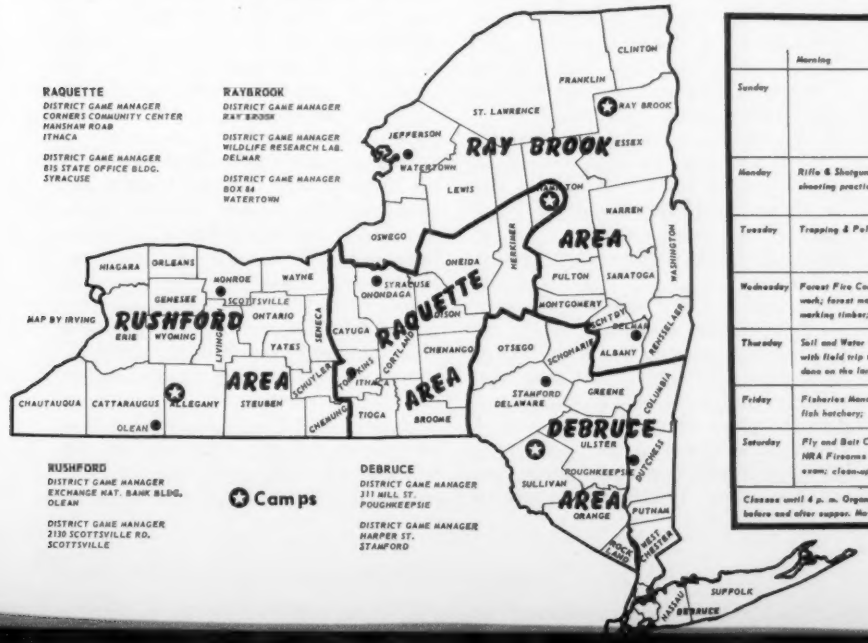
These men expected us to go back to our own communities, to preach the gospel of conservation, to talk about conservation at school, in the Scouts, to church groups, and even to the public service groups like the Kiwanis, Rotary, Lions, etc. The program wasn't just a little vacation in the woods; it was part of a broad State program in conservation. Whether or not we accepted the challenge depended upon our mettle. All in all, this period at DeBruce was a turning point for us in our thinking and action about conservation. As Scouts we had toyed with conservation. Now we had been exposed to the real thing and we found there is a real job in conservation that we could do.

As a result of our experiences at DeBruce in the Summer of 1956 we participated that same Fall in the national convention of the Audubon Society in New York City. Later we were offered junior staff positions at the Audubon Center at Greenwich, Connecticut for the following Summer for a full ten weeks. During the Spring we were busy giving talks on conservation, showing films and doing other projects with the Boy Scouts. We did a great many soil testing and soil erosion projects; we did some work on a tree farm project; we set up a wood identification project which involved 50 samples of different kinds of hard and soft woods; we made leaf identification projects, etc.

At Audubon Center we were assigned projects of enlarging a nature trail, clearing some fields and setting up demonstration areas for different kinds of soil study; establishing the clearly marked boundaries of field, thicket, and forest. Ten weeks of this gave us enough experience and knowledge to work seriously for the Hornaday Award. We look back, though, at the basic training we received at DeBruce in making this wonderful experience possible.

All told, we spent about four years working on projects in conservation, showing films on soil and water conservation, talking to Boy Scout groups, church groups, the Rotarians, Kiwanians and Lions about soil testing, soil erosion and soil conservation; we became apprentice instructors in the National Rifle Association program to help spread the gospel of hunter safety.

All along the way we kept excellent records of our projects—of our talks, our engagements, our experiences. When the time came to make formal application for the Hornaday Award, we each submitted a pile of typewritten evidence of our work about six inches high. We hoped our Council would find the work good enough for the Hornaday Badge but we never dreamed it would be worth the Gold Medal, which each of us received about Christmas time, 1958. With the Award, we also received a special citation from Dr. Fairfield Osborn of the New York Zoological Society. That's how it was done! We admit to being very proud of our accomplishment and we don't want to minimize the effort that we invested. But we do want to emphasize that other Scouts can accomplish this goal, too, and we hope that they will be inspired to make use of the facilities of the New York State conservation camps and similar programs in other states to this end.



TYPICAL WEEKLY CAMP SCHEDULE

	Morning	Afternoon	Evening
Sunday		Registration; Health check-up, camp orientation. Each camp has its first aid man. Local doctors are available for emergencies.	Preliminary firearms instruction. Movie.
Monday	Rifle & Shotgun training and shooting practice.	Small mammal trapline; tree and shrub identification; wildlife values; animal sign.	Movies on trapping; bird identification slides.
Tuesday	Trapping & Pelt Preparation	Field trip and discussions on beaver, muskrat, waterfowl management.	Movie on forestry, forest fires.
Wednesday	Forest Fire Control & Ranger work; forest management, marking timber; wood uses.	Forestry field trip.	Movies on Soil and Water Conservation.
Thursday	Soil and Water Conservation with field trip to see work done on the land.	Stream improvement work-building rock pools, deflectors and simple log dams. Stream ecology.	Sportsmanship and campfire. Movie on Fish Management.
Friday	Fisheries Management; trip to fish hatchery; stocking policy.	Fly and Bait Casting.	Law Enforcement talk with Game Protector.
Saturday	Fly and Bait Casting contest; NRA Firearms exam; camp exam; clean-up camp.	Return Home.	An overnight bivouac is scheduled at some of the camps.
Classes until 4 p. m. Organized Sports, fishing, archery allowed before and after supper. Movie time at 8 p. m. Lights out at 9:30 p. m.			

Open meadow adjacent to plantation provides summer foraging area for wildlife

Conifer Plantations and Wildlife—Part II

Managing the Plantation for Wildlife

by Robert Leo Smith

This is the second of a two-part article dealing with the role of coniferous plantations as wildlife habitat. Here, the author considers the effect of various plantation management techniques that influence wildlife use. —Editor

MOST New York State plantations could support more wildlife, if they were managed toward that end. Some of these management practices are just good forestry; others, unfortunately, will result in a reduction of volume in the planting.

In planning a plantation for wildlife, one of the first considerations is its size. This will depend upon the species of wildlife to be encouraged and the amount of land available. If the land area is large, then extensive plantings may be just the thing—if you provide a variety of openings. The past policy on State reforestation lands of leaving unplanted strips one chain wide on either side of hedgerows was quite effective in developing wildlife areas. Other spots, already valuable for wildlife should be left unplanted. These include wet spots, heavy growth of grass, brambles, gray dogwood, old orchards, apple trees, hedgerows and other areas attractive to wildlife.

I have seen plantings in New York State where excellent food and cover for cottontails were underplanted to pines. In a few years this cottontail habitat will be eliminated. All that was really needed in such an area was a small planting or clumps of conifers planted at the edge of existing cover.

If a large area is to be planted, then the pattern of reforestation should be modified to form sort of a checkerboard arrangement. This would require alternating blocks of conifers of several species with unplanted areas. These would not need to be as large as the conifer blocks.

Much abandoned land is too poor to develop a good natural growth of plants. In such instances the openings allowed will have to be planted to shrubs. Gray dogwood, multiflora rose, autumn olive, silky dogwood and perhaps bayberry are satisfactory. Other openings should, where possible, be plowed, fertilized and planted to grasses and legumes as clover or birdsfoot trefoil. If the planted area has the financial support and backing of organized sportsmen's clubs, some openings could be devoted to wheat, corn or buckwheat.

All openings are subject to natural plant succession. Eventually shrubs are going to replace grass and trees will replace shrubs. This means that some effort will be required to maintain shrubs and grass in areas where they are wanted. Cutting or chemical control of incoming tree growth will help keep shrubs, and the fertilization and annual cutting of grass will hold down the shrubs in grassy areas.

Small blocks or narrow bands 10 to 12 rows wide of black locust are particularly desirable in coniferous plantations. The locust itself is of little direct value to New York State game but its nitrogen fixing properties provide an indirect means of sustained nitrogen fertilization. This encourages a heavy herbaceous ground cover which not only supplies Summer cover and insect food for grouse broods, but also a food source relatively rich in nitrogen for rabbits and deer.

Fire lanes through a large plantation not only make it easier to walk into, and hunt a planting; they also increase the amount of edge. If these lanes are not periodically disked and if some vegetation develops, the lanes provide dusting places for grouse, Summer food and cover for rabbits and food and Summer travel lanes for deer.

Fire trails could be improved for wildlife by planting to grass and legumes like birdsfoot trefoil. This would create Summer food in the form of forage and grassland insects. Here again this would require money and time. The seed bed would have to be prepared and the ground fertilized and limed. The growth would have to be cut in early Fall to eliminate the hazard of dry material and to maintain the stand.

Water in the right places adds considerably to any area and plantations are no exception. A few small ponds or wildlife marshes are scattered through plan-

**This article is based on studies conducted by the Conservation Department under the P.-R. (Federal Aid in Wildlife Restoration) program.*

tations in southern New York State. Wherever they exist they are used rather consistently by deer. They attract raccoons into the plantations. If the water areas are large enough, mallards, black ducks and wood ducks settle on them.

Ponds have another purpose in plantation areas. If properly located in respect to fire lanes and topography, water would be available for fire fighting.

Where small areas are involved, the plantings will best serve wildlife if they are located close to some adjacent cover, as hedgerows, woods or overgrown fields. Plantations from one to five acres situated close to one another and separated by hedges, shrubby fields or hardwoods are far more useful to wildlife than isolated small plantings. These latter rarely develop into any lasting cover. Their prime usefulness is rabbit cover in open fields. After the lower limbs have died, these isolated plantings are close to being "wildlife deserts."

Mixture Adds Variety

A mixture of conifers in a plantation adds variety in the way of cover and nesting sites. A wildlife plantation should consist of two or three types of conifers. Each type should be planted in a rather wide band or block with a minimum of 20 rows of pine and 10 widely spaced rows of spruce-like trees. Block planting is far preferred to "bucket mixes," since it prevents one type of conifer from becoming dominant over the other. The blocks will be wide enough also to create favorable conditions for those wildlife species preferring one type of tree over another.

In establishing a plantation our thinking too often favors such species as red pine, Norway spruce or larch. Occasionally, if the site is suitable, other conifers should not be overlooked. This is particularly true if one doesn't care too much about future timber values. Jack pine, for instance, can adapt itself to such adverse conditions as thin infertile soils and intensely cold Winters. It is valuable in controlling accelerated erosion and serves as a nurse crop for hardwood reproduction. It also furnished good Summer wildlife cover. Balsam fir might do well on cool moist sites.

When an area is planted to pines, the plantation should be surrounded by several rows of spruce. Cover conditions about the edges of pine plantings deteriorate when the trees go beyond 20 feet tall. The spruces, however, retain live lower branches, produce good edge cover and reduce the flow of wind to the interior.

Once a plantation is started on its way, there is a tendency to forget about it. Actually these plantings are continually growing. They pass in and out of periods of maximum usefulness to wildlife. The trick is to keep them as attractive to wildlife over as long a period as possible.

Generally speaking, the 6 x 6 feet spacing of plantations is too close to maintain rabbit cover for very long. Good cover for rabbits, snowshoe hares and grouse can be held for a longer period if the trees are spaced 10 by 10 feet. This allows the trees to retain their lower branches and the herbaceous plants to remain for a longer time.

Periodical removal of conifers for Christmas trees encourages the retention of lower branches. Spruce plantations on Bear Spring Mountain Game Management Area, Delaware County, are kept in excellent condition for grouse and snowshoe hares by this practice. The trees, now 25 to 30 feet tall, were originally spaced 6 by 6 feet; but the removal of Christmas trees has permitted the remaining spruces to retain their lower branches and the brambles to develop between them.

Stands of uneven heights have an assortment of habitats that attracts a variety of wildlife. Rabbits, grouse, magnolia, myrtle, and Nashville warblers, cedar waxwings, robins, purple finches and towhees, all occur more commonly where conifers of varying heights occur.

Stands of uneven heights can be developed in several ways. One method is to include blocks or rows of fast growing conifers with slower growing ones.

Over large acreages, the planting could be staggered over two or three planting periods about five years apart.

Managing the plantation for Christmas trees is one of the best ways to develop uneven stands and would work well in all but jack pine and larch. These two can hardly be classed as good Christmas tree material.

Christmas trees are harvested when the conifers are 6 to 12 feet tall. If the trees removed are replaced by new seedlings an uneven stand will result; and the trees will be bushy with branches close to the ground. These conditions are stabilized over a long period of time. Such plantings create excellent habitat for the cottontail rabbit and snowshoe hare and to a certain extent for grouse. This type of plantation management would work well on beagle trial grounds where the best cover conditions for cottontails must be maintained over a number of years.

The silvicultural practices as pruning and thinning in a plantation have an important effect on wildlife use, but it is hard to generalize about these practices. How much to prune and thin all depends upon the conditions, the needs and the goal desired. So rather than generalize, it might be better to be somewhat specific.

Pruning in red pine and in spruce plantations should be restricted to crop trees and the thinning confined to the areas about them. If timber is not the goal, then thinning in spruce should be heavy enough to encourage the spruces to retain living lower branches close to the ground. Crop trees only should have their lower limbs removed.

Row thinning and complete pruning opens up a red pine plantation too severely yet the crown closes fast enough to discourage ground cover development.

Jack and Scotch pine thinning and pruning seems to encourage the development of ground cover. This greatly improves wildlife values of the planting.

The outer four to six rows of trees should be left unpruned and unthinned. This will maintain some cover about the edge and reduce wind penetration.

Hardwood growth generally is not tolerated in a good conifer plantation, but the presence of some hardwoods is very valuable in maintaining an abundance and variety of wildlife. Aspen thickets and overstory, hawthorne, wildcherry, sumac, apple and other trees should be allowed and even released in some places throughout the plantation. These hardwoods have considerable influence on the distribution of grouse, rabbits, deer and song birds throughout the plantation. In a wildlife planting hardwoods should be removed only when it will result in the development of more valuable ground cover or sprout growth. Even in plantations for timber, hardwoods could be tolerated on poorer sites within the planting.

Another aspect in plantation wildlife management is harvesting the game. That admittedly could be a tough job. One look at some plantations would discourage a lot of hunters from entering.

Lanes can be made through a planting by completely pruning two rows of trees or by limited row thinning. These lanes could lead to openings and fire lanes within the plantation. Once such lanes are opened, the deer usually take them over. A couple of nice lanes through a planting, several good food producing openings and a lot of nice cover in which he can conceal himself—why the hunter shouldn't miss.

The application of some of these management suggestions to a plantation can materially improve a conifer planting for wildlife. The extent to which they are applied will depend upon the primary purpose of the plantation, for admittedly some of the recommended practices will reduce the timber values. If the actual needs of wildlife are considered when the plantation is being planned and planted, then no conifer planting needs to be a wildlife desert.

New York's Flying Trout

by James J. Lindsey

LIKE to get away from it all for a while this Spring and get in some mighty nice brook trout fishing as a bonus? Well, the Department stocked 298 remote Adirondack ponds with trout last year (*See listing, page 37*) and it's not too difficult to cash in on some of the tranquility that this kind of fishing provides. There are some 480,000 speckled trout back in these placid retreats just waiting for a nice-looking worm or fly. And these aren't just run-of-the-mill fish either; they had the best of bringing up and we escorted them to their new homes—by air!

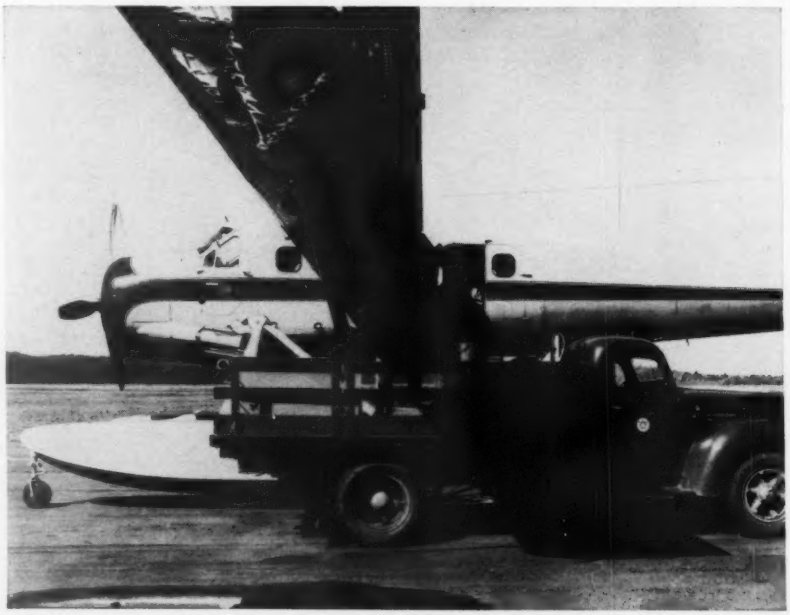
We will guarantee you won't feel crowded in any of these ponds; in fact, you might get downright lonely, for, with the exception of a few of the larger ponds which can accommodate seaplanes, they can be reached only by hiking in. If you want to fish from a boat, better take one in with you or you'll be disappointed; you'll find no handy boat liveries here. A 14-foot Adirondack guideboat is just the ticket for two people; three if they are relatively quiet.

They say there's nothing new under the sun and, of course, using airplanes for stocking trout in these isolated ponds is no exception. New York State has been doing it for more than twenty years. The State of California even tried a helicopter in 1952 for stocking some small, high, glacial ponds. The helicopter sounds like a good tool for this work but it has several important drawbacks: (1) Very expensive to buy and maintain; (2) slow in level flight; (3) small payload for the investment. Last year the Department purchased an amphibious (on wheeled floats) De Havilland "Otter" for forest fire control and fish stocking among other uses. It's a big 'ship (*see photo*) with a 600 horsepower engine powering a three-bladed propeller. The 'plane can carry a payload of 1,800 pounds—a real work horse. This means it can haul about 250 pounds of trout plus the necessary water and equipment. Since all but five of these Adirondack ponds are stocked in the Fall when the trout are about three and a quarter inches long (70 fish to the pound) this means that the "Otter" can fly about 17,500 trout at one time—enough to plant 11 average-sized ponds.

There are some very good reasons for doing the airplane stocking in the early Fall, usually early October. First, fisheries biologists have found that the three-to-four-inch fingerling brook trout Winter very well in these ponds and usually are legal-sized come May. When trout can do this well in Nature, there is little point in wintering them in fish hatcheries at considerable expense. Second, a large number of these ponds are not cleared of ice until after April 1st and can't be "spring planted" until the best or the "iceout fishing" has gone by. Third, smaller trout suffer less impact than larger ones in airplane drops; our studies have shown no impact damage to these fingerlings. Fourth, in the Fall, the pond water has cooled to about 50°F which is pretty close to hatchery water temperatures; therefore, the fish are not subjected to temperature "shock," the physiological stress occasioned by sudden temperature changes. Fifth, and very important, the land mass and the air mass are near the same temperature and the pilots don't have to contend with treacherous up and down drafts. Flying down through Avalanche Pass at 300 feet of altitude to stock Lake Colden and the Flowed Lands is exciting enough on a perfectly calm day. Those familiar with Avalanche Pass can appreciate why little Avalanche Lake is not stocked by 'plane; Mt. Colden and the McIntrye Range are so close at this point that some of the wing tip paint might get scratched!

It was mentioned that the Conservation Department was planting fish by airplane some twenty years ago. Some of the commercial Adirondack bush pilots were doing some work on their own then too. Scott, Smith, Windhausen and other Adirondack bush pilots developed fish dropping apparatus for their small seaplanes so they could do charter work for private estates, New York State and some of the counties. Ninety-nine of the 116 air-stocked Hamilton County ponds were done at county expense with chartered 'planes. In 1957, when the Department was without a fish planting airplane, Essex and Warren counties, as well as Hamilton, chartered commercial 'planes to stock their ponds at the rate of $15 per pond. This is a clear indication of the local interest and faith in this technique of fisheries management. Good fishing means good business; the dollar value of the airplane stocking program goes far beyond the fish in the creel.

Since the inception of this program, its popularity and usefulness has increased tremendously. The State's fish hatchery men, who are responsible for fish planting in the Adirondacks, are particularly fond of the air stocking technique. The old method of carrying the fish back in with back-pack cans was time consuming and arduous. At the Warrensburg Hatchery, for instance, four or five extra men were hired for the months of May and June each year. Their job? Carrying fish in to the ponds inaccessible by truck or team. Now, with an airplane, three men and a pilot can do the same job in only three days.



Trout are loaded aboard at the airport

work. It doesn't leave the pilot time for any extra duties. It's the spotter's job, therefore, to co-ordinate the entire procedure, from arranging for truckloads of fish to lie at the points of take-off at the right times and all the other arrangements through the season to seeing that the equipment is properly stored in the off-season. The pilot, of course, has the final word on all aspects of the job which concern the airplane. The entire flying schedule is laid out well in advance but its completion depends on the weather. It is not unusual to have 'plane, trucks, fish, and crew standing by for a week waiting for flying weather.

Most of the trips consume an hour or

Left, trout drop over pond; below, scheduling a run

Moreover the back-packers used to plant one and a half-to two-inch Spring fingerling trout. Now we know that the Fall three-to four-inch fingerlings have a distinct survival advantage.

We have been talking about this airplane stocking at some length; let's take a look at the mechanics involved. A special "drop" tank is installed in the aft section of the 'plane cabin. It is simply a large, stainless steel funnel, with the small end extending through the ship's belly skin and containing a closing plug. Forward in the cabin are two, 4 feet by 1½ feet aluminum tanks, three feet deep, each capable of carrying about 7,500 three and a half inch trout. All three tanks are supplied with oxygen without which the crowded trout would suffocate in a very few minutes. The crew is a pilot, a "spotter" who sits up front with the pilot and two men aft in the cabin to look after the "payload."

Piloting four tons of airplane in and out of four- and five-acre ponds at tree top level is tricky and definitely full-time more and the airplane must be serviced, so five or six trips are tops for one day. While the hatchery men are transferring water and fish from truck to airplane, the pilot and spotter are checking the flight plan on United States Geological Survey quadrangle maps.* Usually, the first pond stocked on a trip is a larger one a good distance away. This is done to permit off-loading a considerable amount of gas, water and fish before attempting swoops down to the smaller ponds. A few minutes before coming in over a pond, the cabin crew loads the drop tank with the recommended number of trout. The pilot surveys the surrounding terrain and chooses his approach according to the best way out (usually at the pond's inlet or outlet). As the 'plane breaks in over the edge of the pond, the dump signal is given, the drop tank plug is pulled, out go water and trout in a short one- to 200-yard arc into the pond. Then the "fun" begins—the only way out is up and maybe in a turn. Second growth poplar looks like skyscraping Douglas fir as it races past under the floats. But the next pond may be just over the hill so the crew doesn't spend any time worrying; that drop tank has to be reloaded.

The work goes along smoothly enough on a calm day. The windy ones are rough! The cabin floor gets wet and slippery and getting a scap net of fish into the wide mouth of the drop tank is like threading a needle on a roller coaster. There isn't any competition among the hatchery men for this job. This is hazardous work for these Department men, but it's the job to be done. Then too, most of the men have fished some of these ponds and have sampled the results of airplane trout stocking. They know they're contributing.

Let's survey briefly some of the results. Forty-six remote Adirondack ponds have been poisoned (using rotenone) and reclaimed for trout fishing. All of these are supplied annually with trout by air. This program is continuing and is restoring excellent trout fishing to a host of formerly perch-infested waters. Earlier it was mentioned that these fingerling trout reach legal size in the Spring. The prettiest part of the picture comes a year later when most of these fish have grown to 14 inches and weigh about a pound or a pound and a quarter. Often a day's fishing on one of these ponds will produce a limit catch—all these 14-inch, two-year-olds. Not always, of course; you can get "skunked" too. A word of warning is probably in order here. If you've been on a pond for awhile, caught a few and then they stop biting, chances are you have "laid" the pond. Move on and return later.

Whether you fish fly or worm, spin or cast, from boat or shore, you owe it to yourself to try one of these ponds. The local Conservation Department men (Forest Rangers, Game Protectors, fish and game men) can give you the details on how to find the ponds. We have tried to do our part but we won't feel the job is complete until you've got some of these fish in your basket. Good luck!

And just one final plea. Much hazardous and back-breaking work has gone into the reclamation of many of these remote and beautiful trout waters. Don't "kill it" by using live bait. First off, it's illegal and you will be subject to arrest and a fine. But more, it's almost immoral. These waters were "born" for native trout and vice versa. Let's keep them that way.

*These are the best maps for you to use as a guide to "back-in" ponds. They may be purchased for 30 cents per quadrangle sheet from the U. S. Geological Survey, Department of the Interior, Washington 25, D.C. An index to the quads is free; this will show the area covered by each quad and will give the correct name in ordering.

The Dunkeld Larch

A Scottish Hybrid Paces the Conifer Field

by **David B. Cook,** *Supervising Forester*

DUNKELD LARCH—An interesting, intriguing name for a strange and little known forest tree! It sounds like something special, something that would lend glamour to your reforestation project, something of a conversation piece. And so it is! That New York's tree-planting public has such ideas is in large part due to the professional writings of Littlefield, Eliason and Cook; to some of our enthusiastic sales talks and to a collection of superb specimens that grow at Cooxrox Forest.* The interest so aroused has brought the Bureau of Nurseries a trickle of inquiries: "Where can I get seed?" "Where can I get seedlings?" "What is so good about it?" "What does the name mean?"

The name Dunkeld larch is properly given to the hybrid between a female Japanese larch (*Larix kaempferi*) and a male European larch (*L. decidua*). It was first reported in the botanical literature by Henry & Flood in 1919, who called it *Larix eurolepis*, a name made by combining parts of the then-used specific names of *L.europaea* and *L.leptolepis*. Their material was collected at Dunkeld, in Perthshire, which long has been and still is the great center of larch cultivation in Scotland. The Japanese larches along The Avenue at Dunkeld, from which most first-generation hybrid seed has been collected, were planted in 1887. They are within easy pollenating range of some fine European larch of old Scottish origin growing on the Kennel Bank not far away. The working foresters on the Atholl Estates had recognized that some of the little trees grown from seed of these Jap larches were bigger than average and of a different twig color, and had selected these hybrids and planted them separately, beginning about 1900. It has since been determined that natural hybridization has taken place in at least four other locations in Scotland and one in England. The reciprocal cross of Jap onto European also takes place and no one is quite sure how much of this is now involved in the ancestry of some hybrid larches.

Dunkeld larch should rightly be applied only to this first-generation cross, technically referred to as F-1 or first filial generation. The British foresters call these trees Hybrid Larch and, although hybrids exist between other species of larch, they apply the name only to the Japanese-European cross. In New York, we have come to use Dunkeld larch as the name for all of these Jap-European hybrids, no matter to what generation they belong or in which direction the cross had been made. Our practice may be technically incorrect but its use is quite fitting and proper, for it honors the Dukes of Atholl, who have owned the property at Dunkeld, and particularly John Murray, the fourth Duke of Atholl who, between 1774 and 1815, planted 1,108,998 larches. Right or wrong, I suspect the name will stick.

In its physical characteristics—stem form, twig color, flowers and cones—the Dunkelds are intermediate between their parents. But in addition, they exhibit hybrid vigor; that is, they grow faster than *either* parent. All the larches grow rapidly from the time the seed germinates; 1-year seedlings are often six inches tall and 2-year seedlings may be two feet or more tall. (This is something of a problem in the nursery, for a thousand of these big seedlings begins to look like a bale of hay. We like to keep the stock down to the 12 to 16-inch size.) When planted on suitable sites, rapid growth continues and when the trees are five to ten years planted, they sometimes put on annual increment of four feet or more. Even on not-so-suitable sites, larch will generally outgrow any other conifer, and the Dunkelds are the finest of the larch group. For their best development, all larches need a well-drained, well-watered soil at least 16 inches deep; plenty of atmospheric moisture and freedom from late frosts.

Larches will begin to produce seed when about ten years old and be in fairly heavy production by twenty years, so the generations follow one another in rapid succession. For more than half a century, the Scottish foresters have been sorting the hybrid seedlings from the nursery beds and putting them into separate plantations. These, in turn, have grown up and produced seed and it is mostly from these F-2s (second filial generation) and their descendants that our Dunkeld larches have come.

The acquisition of our first Dunkeld larch seed was a stroke of incredible luck, for true, known-origin larch seed is a rare item. In 1928 that noted plant pathologist, the late Dr. E. P. Meinecke,

*The author's collection of managed trees and unmanageable rocks in the hills of Rensselaer County.

visited Dunkeld, where the Duke of Atholl himself showed him his larches and later sent him a small quantity of seed gathered from the Japanese "mother trees" along The Avenue at Dunkeld. (It is not often we get a Certificate of Origin on such authority!) Some of this seed Dr. Meinecke sent to New York State and from it were grown 160 three-year plants which were set out on the experimental part of Reforestation Area, Montgomery No. 1, on October 29, 1932. Because of its heavy, shallow soil, slow drainage and full exposure to the northwest wind, Montgomery No. 1 is a poor place for larch. The little trees heaved so badly that they had to be reset the next Spring. In spite of such troubles, survival has been reasonably good but the plantation has always shown the bad effects of an unsuitable site. Seed has been produced for a number of years now and there are many volunteer seedlings coming up around the parent stand. So far as we know, this is our only older plantation of F-1 Dunkeld larch. At Cooxrox Forest, I have a little planting made with seed collected from Montgomery 1, now four years old.

In 1934 the Department bought from Benjamin Reid & Company of Aberdeen, Dunkeld larch seed which, according to the seller's report, "had been collected from its original source, Dunkeld in Perthshire," from second-generation hybrid larch. This Seed Lot #E-207 produced 11,100 seedlings, most of which were distributed in the Spring of 1936, in lots of a thousand or less. Unfortunately, 1936 was a year of drought so severe that all but one of the plantings failed.

In 1937 and again in 1938, Herbst Brothers of New York City procured for us lots of hybrid larch seed from Perthshire; the former (SL#89) produced 37,700 (2-year) seedlings, the second (SL#122) 68,500. These seedlings were widely distributed to both private and public planters. I am personally acquainted with one plantation made from the first lot, SL#89; it has done very well and has produced at least three outstanding trees. Another is already a source of seed.

Then came World War II and first the European foresters, then all the rest of us gave up the collection of special tree seed for the grimmer tasks of fighting a war. After 1945, we began to get back to the ways of peace, to re-establish contact with European and Japanese foresters and to get on with that part of "building a better world" that is accomplished by planting superior trees.

While the Department has not purchased any commercial seed of Dunkeld larch recently, we have been able to collect some from plantations on State Forests. Cones were gathered from a plantation of SL#89 growing in Forest District #8 and in 1956, 41,000 (2-year) seedlings of this SL#402 were distributed.

For 1959, there are three lots of Dunkeld larch to be shipped out as 2-year seedlings. SL#456 was collected in Forest District #4. The 12-acre parent stand is a mixture of Austrian pine, Chinese pine and Dunkeld larch of SL#89; the larches are straight and fast growing. SL#457 came from a stand of SL#122 growing in Forest District #5. SL#458 also came from Forest District #4, from a parent stand that is a mixture of two lots of European larch (SL#87 and SL#88) and one of Japanese larch (SL#90). The first two lots are, perhaps, third generation or F-3; at least some of the last lot are pretty surely F-1 hybrid. All three lots are very nice stock.

Back in 1931, Everett J. Eliason of the Bureau of Nurseries set up a system of records which gave to each and every incoming lot of seed a number. Under this number is recorded all that is known about that particular seed lot: Where it came from, and from whom, and when; how it germinated; when and where it was sown; how many seedlings were produced and to whom they were shipped—a veritable gold mine of information. It is from these records that the facts for this paper have come. So, for at least some of our home-collected seed, we can tell you not only who mother was but also who grandma was, and that helps a lot.

In New York's reforestation program, larch is a minor species. For 1959, we expect to ship 2,885,000 seedlings, which will be a mere 7 per cent of our total production. It appears on the tree order blank as Japanese larch and that is what most of it will be, simply because good Jap larch seed is consistently available in quantity, whereas the supply of suitable seed of other larch species or hybrids is limited and often erratic. Sometimes we do have small quantities of stock of European and Dunkeld larch from local collections and even some surplus of our special, known-origin experimental stock is shipped on regular tree orders. But, in the rush of digging and shipping 40 million trees in just 21 Spring days, there is neither time nor manpower to handle special orders for special lots. If you order Japanese larch, chances are that is what you will get; it will be good stock and true-to-name. If you ask for Dunkeld larch and we have it, the Nurseries will try to fill your request. If all goes well and you have a really good site for larch, you may end up with a tree like the one illustrated. Some people are lucky that way, among them a lad by the name of *Dave Cook*.

The Grange and Conservation

No one appreciates the bounty that good land can provide more than the people who work with it, and, with this in mind more than 1,100 New York State Grange units comprising some 120,000 members, are making conservation their prime objective this year. Their thought provoking slogan will be "Co-operate to Conserve—We're Stewards of His Bounty."

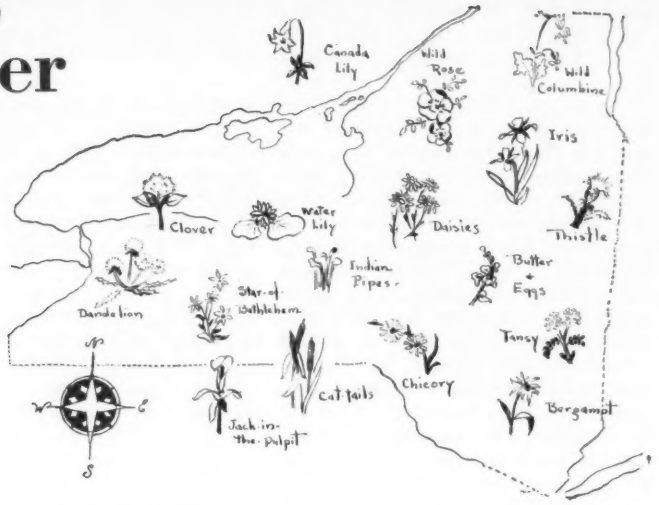
The program's objectives will be for every Grange—including 53 Pomona (county) Granges, 846 Subordinate (local) Granges and 264 Juvenile Granges—to complete some conservation practice in its community. The activities of this large working group will be guided by their lecturers who in turn will be provided with practical program suggestions.

It is planned to present State Grange citations to those units which submit credible reports of their accomplishments at year's end.

Program suggestions vary from the small scale which might include improvement of Grange hall locations by the planting of trees and shrubs to large scale ventures where a co-operative effort with other organizations could establish exemplary conservation practices such as the building of a wildlife marsh, the establishment of soil conserving practices on a farm or the improvement of a section of stream. Such programs could go a long way toward improving landowner-sportsmen relations, one of our paramount problems. For others, programs for conservation of human life—safety and health; conservation of individual resources—spiritual, youth and old age and conservation of heritage—American democracy and rural life—will be in order.

The stage was set for this ambitious program when, at the 86th annual meeting, Leland D. Smith of Franklin County, Master of the State Grange, declared that conservation of natural and human resources should be of utmost importance to all Grange members. He stressed that care and management of our soil and water resources must be dealt with objectively and firmly if we expect to maintain their adequacy for supporting the ever increasing population that is forecast for our country.

The Wandering Wildflower



by Olga Lindberg

WHEN you come upon a flower-strewn meadow or walk through a shady woods have you ever wondered about the wildflowers —where, on the earth, they originated, what their history is, how they happen to be growing there by the roadside or in the fields?

Many varities of wildflowers grow in New York State and the origins of some can be traced to ancient times—to Asia, to Europe— but how did they happen to wander so far from home?

Some, we know, were here long before the Pilgrims landed, some were brought in by the early settlers, but it is quite certain that ever since the glacial ice receded from the eastern part of North America, the meadows and woodlands have been covered with a carpet of wildflowers.

Long before 2400 BC, the Water Lily, the Iris, the Clover and the Rose were flourishing in Africa for these flowers were included in the dried garlands which were discovered, perfectly preserved, in the tombs of the dead in Egypt. The Lily and the Iris were also used as symbols by the Egyptians to decorate their temples, and fragments of these plants were found preserved in the sunbaked bricks. This is the earliest known record of these flowers, although they no doubt were growing on the earth long before that time.

Many flowers also are mentioned in the Bible: "And when she could not longer hide him, she took for him an ark of Bulrushes and daubed it with slime and with pitch and put the child therein and she laid it in the Flags by the river's brink" (Exodus II-3). This is the story of Moses' mother hiding him in the Bulrushes (Cattails) along the River Nile, and of course the Flags mentioned are really wild Iris. The story was recorded about 1573 BC.

One of our best loved wildflowers, the Daisy, grew in many sections of Europe and Asia, and emigrated to America with the early settlers among the seeds which they brought for their gardens or in the dried mud on their garden tools. The seeds of other roadside flowers were brought from Germany by the Hessian soldiers during the Revolutionary War in the hay which they used to bed down their horses.

The name "Daisy" is derived from the Anglo Saxon and means Day's Eye. In France it is known as La Marguerite; in Scotland, the Gowan; in England, the Bairnwort; and it also is called the Bruisewort, because of its healing properties. In the early days, it was mixed with new butter and applied to the joints to relieve pain and the juice of the leaves and roots, if snuffed up the nostrils, was said to be good to clear the head. The leaves also were used for poultices and to relieve swellings.

The Dandelion probably first grew wild in Persia, but quickly spread to the rest of Europe. This, too, was brought to America by the early settlers—a stray seed in the pocket of a coat or clinging to a bit of mud on a man's boot. This flower has been known by many names—the Blowball, Lion's Tooth, Peasant's Cloak, Yellow Gowan, Priest's Crown, Irish Daisy and Monk's Head.

Some of the folk names for flowers are crude and earthy, while others are quaint and picturesque. Take for instance the common Butter and Eggs. It has been called Jacob's Ladder, Devil's Flax, Toad Flax, Rabbit Flower, Bride Weed, Eggs and Bacon and Impudent Lawyer.

In their constant struggle against the encroaching wilderness, the early settlers had little time to enjoy the beauty of wildflowers, yet a bowl of Daisies on a rough-hewn table or a bunch of wildflowers on a windowsill probably helped brighten and make more homelike many a crude, lonely cabin in the wilderness. No doubt to the early pioneer woman, these wildflowers were one of her few aesthetic pleasures.

Among the wildflowers in America, the first to be cherished by the colonial housewife and cultivated in her garden, was the Wild Bergamot, or Bee Balm. She learned, from her neighbors, the Indians, how to make a tea from the aromatic leaves. This was known as Oswego Tea and became a popular substitute for tea in the pioneer homes.

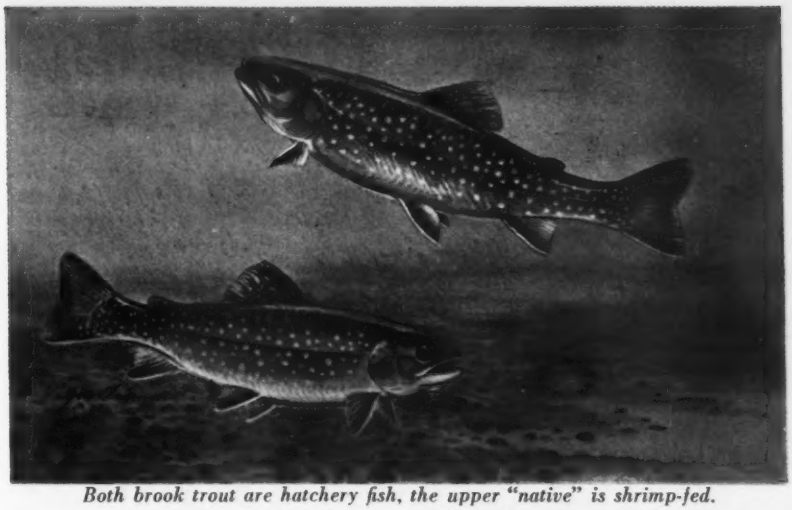
It is interesting to note that as early as 1637, John Tradescant, the Younger, a botanist, came to America especially to study the plants and when he returned to England, took many rare plants with him, including the Cornflower, or Chickory, and the Canadian Columbine. Another botanist who visited here in 1750 was Peter Kalm. He traveled through the Iroquois Country (New York State) as far west as "the marvelous Falls of Niagara" and returned to Sweden with a large collection of American plants.

The ghostly Indian Pipe and the robust Jack-in-the-Pulpit, which is sometimes called the Indian Turnip, may have been here before the pioneers settled in New York State and the Thistle may have made a windborn journey to the new land for it traveled across Europe with the Roman soldiers and arrived in America about the time of the early settlers.

The Star of Bethlehem and the Tansy, or Bitter Button, which has been used for medicine since the Middle Ages, were brought to America from Europe to be planted in the gardens, but they soon wandered away and spread through the fields and woodlands.

Of course, many new wildflowers have developed by cross pollenization—aided by wind, rain, insects, birds, etc.—and this will account for the hundreds of different varieties which we see today, but the robust ancestors of our field flowers came to this country, settled here and adapted themselves to their new homeland, just as did the hardy pioneering families who settled this great country.

by John R. Greeley
Chief Aquatic Biologist
and
K. B. Nichols,
Supt., Fish Culture



Both brook trout are hatchery fish, the upper "native" is shrimp-fed.

Native Brook Trout Coloration

A LONG background of biological surveys in New York streams, ponds and lakes has shown that the typical, modern-day trout population is a mixture of wild and stocked trout—and that after the stocked trout have become fully acclimated, it is no easy matter to distinguish which is which.

However, hatchery trout when first stocked normally lack the brilliant coloration of the "native" fish and it usually takes several weeks in wild waters to bring them into coloration approximating that of their wild brethren. Accordingly, early-season fishermen are often heard to comment disparagingly on the appearance of specimens of their catch, although it must be added that such comments are normally made while the angler is taking pains to transfer the object of his displeasure to his creel.

None the less, the fisheries people in the Department are quite human and it hurts them to have the products of their care and attention rated so poorly. They would be much happier, if it could be done economically, to produce and stock trout that would bring the same glow of aesthetic satisfaction to the angler as does the catching of a brightly colored wild trout. So experimental work was undertaken on this problem a few years ago under a D-J, Federal aid project. This was first reported re "The Color of Trout," in THE CONSERVATIONIST for June-July, 1956. Truly remarkable results were obtained at that time by adding about one-third shrimp heads to the normal hatchery diet. These shrimp heads were secured from commercial fishery processing plants as waste left over when these crustaceans were prepared for market.

More recently, January, 1958, a test lot of brook trout yearlings got the same ground shrimp-head treatment. The accompanying painting (from live specimens at the hatchery) show how these trout reacted to this diet. The painting was made just before the trout were stocked, Spring, 1958. As one can see, the shrimp-fed "natives" are indistinguishable from the wild trout.

Research on coloration, including tests of numerous substance in several hatcheries, body analysis of trout at the Cortland Hatchery and field survival experiments in several bodies of water, has provided a useful basis for planning further procedures concerning coloration. It is important to point out here, however, that the addition of shrimp heads to the diet has shown no merit other than the production of attractive coloration. The standard hatchery diet, itself the product of much study, produces a sturdy trout and the addition of natural food in the form of shrimp heads seems to make no difference in the general health or vigor of the fish. Hence, the value of shrimp additives is pinpointed as being concerned only with the looks of the fish.

Whether or not better looking trout are worth the expense of feeding such additives (only a minor per cent of the total cost of producing trout) is a question which anglers can answer better than anyone else. So far, the general response to brightly colored trout has been favorable. Many sportsmen who participated in the stocking of colored lots of trout have commented favorably on their attractive appearance. As to angler reactions when these fish enter into the creel, it has been evident that some people definitely prefer trout which look wild rather than just planted. One incident that proved the opposite was when a fisherman in central New York was checked by one of our field men. He willingly showed his catch of native trout and said he did not keep any hatchery stocked trout. When he was told that over half his catch was recently stocked, shrimp-fed trout and he was shown the clipped fins to prove it, he was very perturbed. No longer could he distinguish the hatchery trout from his prized natives.

While it should be emphasized that many New York trout waters are of a quality such as to provide good fishing from natural reproduction or the stocking of small trout which grow and become wild, many others are not.

With increasing angling pressure, it seems clear that more and more large trout stocked for virtually immediate capture, often referred to as "put and take stocking" is called for—provided there is some way to pay the bill for this expensive stocking for the rod type of management. If the planting of large trout is here to stay as a substitute for a more natural and old-style type of fishing, then efforts to emulate natural color in planted trout seem desirable. This work on coloration can be said to be at a crossroad—whether to go all the way and color all large trout planted or to turn back is a question that will turn on the preference of our trout fishermen. We had hoped for more comments from sportsmen on the trout caught during the 1958 season. If you think the trout caught last season were of better color than those you take this year, why not let us know?

New York's Big Game Take

BIG game hunters in New York took a total of 66,469 deer and 514 bear during the 1958 season. The 1958 deer take was the third highest of record, exceeded only by the 1956 and 1957 seasons' kill of a little over 72,000 for each of those years. The buck kill (including antlerless bucks) during the '58 season added up to a total of 42,209, while the doe take—all ages—was 24,260.

Regionally, the Catskill counties led the State with a total take of 29,254 deer. Central and Western counties contributed 24,227 deer and the Adirondacks, where a considerably larger harvest by hunters is needed from interior areas, came in third with a total of 12,988 during the '58 season. In the Catskills, the old standby—Sullivan County led the way with a take of 5,666 deer. Delaware was a close second with 4,485 and Ulster third with 3,547. Steuben took the honors for Central and Western counties with 3,658, while St. Lawrence County was top in the Northern Zone with a kill of 2,795 deer.

Even more meaningful, however, than the total take of deer per county are the figures for deer take per square mile of deer range in each county (next to last column in the table). These figures are derived by dividing the figure for the total deer kill by the square miles area of the county, after first deducting such non-deer range areas as highways, water areas, cultivated and other tillable lands, and urban areas—leaving what can be considered basic deer range. This provides a much more accurate index of the relative harvest of deer on a regional and county basis.

Regionally, it will be seen, that the Catskill counties far out-shone the rest of the State, with a take of 4.31 deer per square mile of deer range vs. 2.90 for the Central and Western counties and 0.94 (less than one deer per square mile) for the Adirondack region. Countywise in 1958, Columbia took the lead in the State as a deer harvest producer with 8.52 deer per square mile of range.

Of course, this does not tell the whole story; it takes hunters to complete the picture. It's apparent, for instance, that Adirondack counties such as Hamilton and Herkimer, have the deer to produce better harvests than 1.23 and 0.98, respectively, if adequate hunting pressure were exerted.

As in previous seasons, Department game men set up deer check stations at strategic highway locations in all areas of the State. Information on the deer examined and tallied at these check points plus spot check information from hunting camps, freeze lockers, etc. was used in conjunction with deer tag returns to statistically calculate the take. It was found that, State-wide, the numbers of successful hunters reporting their deer to the Department ranged from a low of 69.5 per cent in the Adirondacks to a high of 74.4 per cent in the Catskills and was approximately the same in all regions as the previous year.

The 1958 season followed the same pattern as the preceding year in providing a one day, deer-of-either-sex season in all buck-hunting areas of the State. This did not permit the degree of flexibility required to assure a greater harvest where needed or to limit the kill in certain areas, particularly in some Central and Western counties, where an adequate harvest had been made previously. This was one factor, game men believe, that resulted in a somewhat lower deer harvest in '58. But more important, according to reports from all sections of the State, was the reduced hunting pressure. The "economic pinch" played a part here, it was thought; many hunters restricting themselves to one or two days off from work rather than taking a longer hunting holiday. Equally important was the heavy snow that blanketed the Southern Zone counties just before the deer-of-either-sex day,

Adirondacks

Counties	Deer: Bucks (Adults)	Deer: Bucks (Fawns)	Deer: Does (Adults)	Deer: Does (Fawns)	Total Deer Take	Tot. Sq. Mile Deer Range Take Per.	Bear: Bear Take
Clinton	260	17	68	16	361	0.47	28
Essex	861	36	141	35	1,073	0.64	65
Franklin	1,641	71	271	66	2,049	1.43	75
Fulton (Northern)	141	10	35	9	195	0.62	
Fulton (Southern)	29	4	10	1	44		
Hamilton	1,759	65	253	63	2,140	1.23	78
Herkimer (Northern)	939	23	84	20	1,066	0.98	24
Herkimer (Southern)	14	2	8	3	27		
Jefferson	96	9	32	7	144	0.23	
Lewis	600	19	76	19	714	0.71	16
Oneida (Northern)	220	17	68	16	321	0.63	6
Oneida (Southern)	42	4	16	4	66		
Oswego (Northern)	171	13	46	10	240	0.52	
Oswego (Southern)	58	1	17	7	83		
St. Lawrence	2,232	97	376	90	2,795	1.37	62
Saratoga (Northern)	179	13	33	7	232	0.49	3
Saratoga (Southern)	23	0	17	4	44		
Warren	477	19	78	19	593	0.73	20
Washington (Northern)	151	6	29	7	193	1.98	
Washington (Southern)	306	52	202	48	608		
Adirondack Totals	10,199	478	1,860	451	12,988*	0.94	377

*Includes 53 deer taken by archers: 17 male adults, 12 male fawns; 17 female adults, 7 female fawns

— Season of 1958

by C. W. Severinghaus,
Game Research Investigator

effectually blocking the "back roads," cutting down on hunting opportunity.

A feature of the 1958 big game season was the number of bears roaming the country-side, particularly in the Adirondacks. These big fellows have been building in numbers during recent years and last Fall they were actively roaming the woodlands until late in the season. One party of Adirondack deer hunters, as an example, reported seeing five bears during the first half day they hunted. They felt they were surrounded, called off their deer hunt and went home. The kill reflected this abundance, with a total of 514 for a new State record. Of this total, 25 of the bears taken had a price on their heads—they sported eartags affixed by Department game biologists during the earlier live-trapping, bear research program.

Hunters who took the marked bears collected $25 each by reporting to the Department the tag numbers, turning in the skulls and giving locations and dates of kill.

Catskills

Albany	235	70	187	66	558	1.97	
Columbia	1,354	362	975	337	3,028	8.52	
Delaware	2,421	444	1,208	412	4,485	4.48	3
Dutchess	1,248	289	773	269	2,579	5.06	
Greene	930	210	564	195	1,899	3.80	25
Orange	919	157	421	145	1,642	3.43	2
Otsego	801	276	746	257	2,080	3.92	
Putnam	540	80	213	76	909	4.54	
Rensselaer	324	65	175	59	623	1.62	
Rockland	231	47	120	43	441	3.03	
Schenectady	46	9	28	9	92	0.88	
Schoharie	527	195	536	182	1,440	4.56	1
Sullivan	3,171	539	1,455	501	5,666	7.22	31
Ulster	2,130	308	823	286	3,547	3.89	50
Westchester	74	63	69	59	265	0.92	
Catskill Totals	14,951	3,114	8,293	2,896	29,254*	4.31	112

*Includes 633 deer taken by archers: 176 male adults, 153 male fawns; 166 female adults, 138 female fawns

Central and Western

Alleghany	1,027	322	887	302	2,538	3.80	7
Broome	622	130	363	123	1,238	3.10	
Cattaraugus	1,077	274	734	256	2,341	2.69	18
Cayuga	136	40	95	38	309	1.11	
Chautauqua	705	193	522	182	1,602	2.68	
Chemung	404	105	295	99	903	3.81	
Chenango	938	282	722	264	2,256	4.15	
Cortland	213	46	123	43	425	1.50	
Erie	205	44	121	41	411	0.83	
Genesee	138	41	114	38	331	1.77	
Livingston	344	102	284	97	827	3.23	
Madison	154	33	88	29	304	0.97	
Monroe	97	20	57	18	192	0.86	
Niagara	45	17	45	14	121	1.00	
Onondaga	109	21	61	20	211	0.71	
Ontario	412	131	356	122	1,021	3.94	
Orleans	92	33	90	30	245	1.93	
Schuyler	348	102	281	97	828	4.35	
Seneca	256	64	168	61	549	4.91	
Steuben	1,609	439	1,199	411	3,658	4.84	
Tioga	610	192	528	178	1,508	5.36	
Tompkins	407	119	325	112	963	3.72	
Wayne	104	27	74	24	229	1.10	
Wyoming	243	79	222	75	619	2.47	
Yates	239	77	211	71	598	4.22	
Central & Western Totals	10,534	2,933	8,015	2,745	24,227*	2.90	25

*Includes 344 deer taken by archers: 111 male adults, 74 male fawns; 90 female adults, 69 female fawns

State-wide totals	35,684	6,525	18,618	6,092	66,469**	2.30	514

**Includes 1,030 deer taken by archers: 304 male adults, 239 male fawns; 273 female adults, 214 female fawns

Trout For Farm Ponds

by Alfred W. Eipper,
Fishery Biologist,
Cornell University

BY current estimates, there are about 15,000 farm ponds in New York State, and new ones are being constructed at the rate of roughly 1,000 a year. The majority of these ponds are eight to ten feet deep, with surface areas up to about an acre. Altogether this amounts to some 5,000 acres of impounded water that have been added to the State's resources during the past fifteen years.

Most owners want to have fish in their ponds, and for the past ten years the State and Cornell University conservation departments* have conducted an intensive research program aimed at developing fish production techniques tailored to the needs of New York farm ponds. This program has been concerned with management of ponds for bait minnow production, for warm-water game and pan fish, and for trout.

The over-all investigation objectives, techniques, and some of the preliminary findings were described in an earlier issue of THE CONSERVATIONIST (Aug.-Sept., 1953). Our purpose here is to summarize the findings on trout ponds in central New York and to discuss management recommendations that have resulted from this information.

Trout Reproduction in Farm Ponds

With rare exceptions, farm pond trout do not reproduce, although they may spawn. This is because most ponds lack a suitable spawning site, which for trout consists of an area of gravel through which a good flow of spring water percolates during the Winter months. This supplies the eggs incubating in the gravel with fresh, oxygen-rich water and keeps them from being smothered by silt deposits. In a few ponds blessed with exceptionally large and concentrated springs, trout reproduction has been achieved by placing beds of gravel in suitable locations.

Trout Survival in Farm Ponds

We are apt to think of trout as denizens of clear, cold mountain lakes and streams. Early in the farm pond investigation, however, it became obvious that trout not only survive in many of these small inpoundments — they prosper in them. It is not too surprising, therefor, that somewhere between 30 and 50 per cent of the State's farm ponds are currently stocked with trout.

* With financial assistance provided by Federal Aid in Fish and Wildlife Restoration.

Between 1949 and 1955, various kinds of trout were tested in central New York farm ponds. These included brook, brown and rainbow trout, as well as brook-brown and brook-lake (splake) trout hybrids. Contrary to expectations, it was found that all of them survive equally well in farm ponds, with the possible exception of the brook-lake hybrid, which may require colder water than the others.

Trout survival in New York farm ponds is determined largely by Summer water temperature. When even the cooler bottom waters of a pond reach about 74 degrees, trout begin to die off if this temperature is maintained for more than a day or so. However, trout have withstood bottom water temperatures up to 80 degrees for very brief periods without undue mortality. Although a year-round supply of spring water gives greater assurance of good trout survival, many ponds fed entirely by runoff from the surrounding watershed have shown normal survival in most years. Since temperature is such a potent influence in survival of farm pond trout, it's not surprising that the percentage of trout that die in Summer months is about double that for the Winter period.

Other factors also influence trout survival. Those stocked as 2-inch Spring fingerlings (above two months old) have a higher death rate during their first year of pond life than do their brothers and sisters stocked a few months later as 5½-inch Fall fingerlings. Also, death rate increases with age.

Averaging results of tests in 70 ponds over a period of six years shows the following percentages of fish present at the start of a given year of pond life that survive to the end of that year, when no fish are removed by angling:

STOCKED AS	SURVIVAL DURING *First year*	*Second year*
Spring fingerlings (2 inches)	20%	25%
Fall fingerlings (5½ inches)	40%	20%

(See page 22)

The black line on the accompanying graph shows numbers of trout remaining in an *unfished* pond at any given time during the three years following stocking at a rate of 600 Fall fingerlings per acre. Few trout remain after three years in a farm pond, and 4-year-olds are a

rarity. This is also the case in most Adirondack trout lakes. It is important to remember that these figures (and those to follow) are averages. Individual farm ponds vary widely. For example, in a tenth-acre pond only five feet deep, 90 per cent of the trout planted one Fall were still present a year later, *by actual count!*

Growth of Farm Pond Trout

Brook, brown and rainbow trout all grow at about the same rate in farm ponds. Average lengths and weights in Spring and Fall of the three years following stocking are as follows:

	1st Yr.		*2nd Yr.*		*3rd Yr.*
	Spring		*Spring*		
		Fall		*Fall*	*Fall*
Inches	8.1	10.1	11.4	12.8	14.2
Ounces	4	8	10	14	22

These are results that can be expected from stocking 2-inch Spring fingerlings or 5½-inch Fall fingerlings in numbers up to at least 600 per acre. In general, growth slows down as the fish grow older; is faster in Summer than Winter.

Like survival, growth rate is another statistic that varies tremendously from one pond to the next. Trout grow more slowly in newly constructed ponds, which have not yet built up a supply of aquatic insect life and other trout food organisms. Fertility of the pond water also influences production of trout food — and hence trout.

In a pond near Ithaca, brook trout grew from 2 inches to 10 inches in five months. This was partly because the population was so low. In fact, there was only one fish left and he obviously had been making a pig of himself.

Production

The preceding introduces another factor associated with growth rate—population density. In general, trout growth in farm ponds stocked with 600 Fall fingerlings per acre is a little slower than when only 200 per acre are planted. But if 600 fingerlings are stocked, the very slight reduction in growth is trifling compared to the two-fold increase in numbers, and the net effect is a much higher total poundage of fish produced — nearly double, in fact. Of course, there is a limit to the total poundage of fish that any body of water can produce, but for New York farm ponds we haven't yet determined that upper limit. Certainly it is extremely high, as trout waters go. In the Fall of 1952, James Fisher of Madrid (N.Y.) stocked his quarter-acre farm pond with fingerling rainbows averaging 6¼ inches, at a stocking rate of 750 trout (90 pounds) per acre. One year later 90 per cent of Jim's trout were still present; average length 9¾ inches, weight 6 ounces. On an acre basis, this was a standing crop of 250 pounds of trout! By contrast, trout lakes and ponds of the Adirondacks seldom produce standing crops as high as 20 pounds.

The total poundage of fish present in a pond at any given time is determined by the net result of two opposing forces: (1) The death rate, which reduces poundage, and (2) growth, which increases the poundage. In a population of fish all the same age, the total weight of that population increases when the poundage being added by growth exceeds the poundage being lost by reductions in numbers. When the effect of death rate overbalances that of growth, a net decrease in total poundage results.

The red line on the graph (*on page 22*) shows the total pounds of trout that would be present in an average New York farm pond at any given time during the first three years following stocking with 600 Fall fingerlings per acre, if none of them were removed by fishing. Under these conditions total poundage reaches a maximum of about 115 pounds per acre by Fall of the first year following stocking, when some 230 trout remain. One year later only 41 pounds (45 fish) are left.

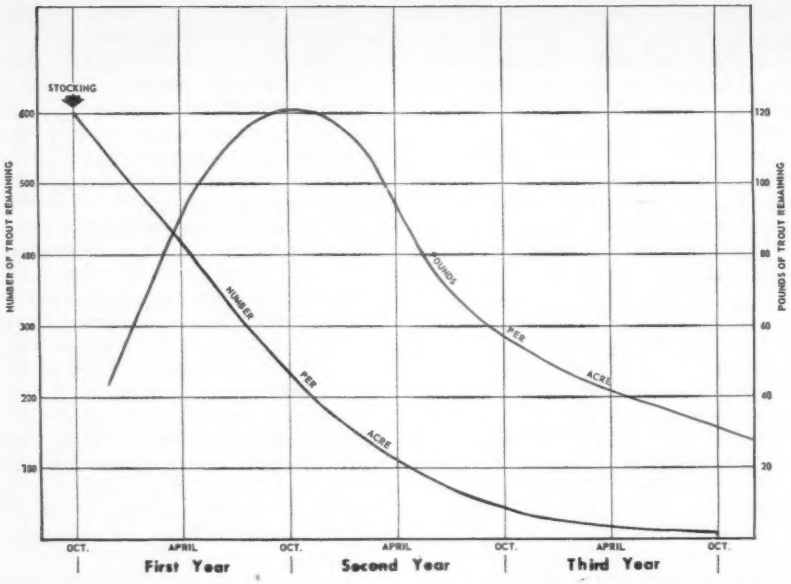
Armed with the above information on survival, growth, and production, the New York pond owner is in better position to determine how to stock, harvest his fish crop, and restock in order to obtain the maximum sustained yield of trout. However, chances are that his results will only approximate the averages reported here, since (to repeat) farm ponds are such rugged individualists.

Stocking

There is no sure way of predicting whether a farm pond will be suitable for trout except to try them, since pond temperatures are influenced by so many factors — depth, elevation, water supply and climate—to name a few

As to kinds of trout, either brooks or rainbows are recommended. Brown trout have proved unsatisfactory in New York farm ponds for two reasons: They're considerably harder to catch, providing poor to indifferent fishing and a low yield on the investment. Also, the old browns remaining in a pond prey heavily on fingerlings introduced for restocking. The hybrids that have been tried experimentally appear to offer no outstanding advantages for farm pond stocking and are difficult to produce in large numbers.

Upper left, typical farm pond; lower left, stocking trout fingerlings; above, sample netting brook trout population; below, farm pond rainbows



Fall fingerling trout for farm ponds may be obtained free of charge from the U.S. Soil Conservation Service if you are an S.C.S. co-operator. If not, you can apply (prior to January 1 of the year fish are wanted) to the Boston office of the Fish and Wildlife Service. In either case, your pond must be at least a quarter acre in area but not over five acres, and must be considered a good risk for trout. Either Spring or Fall fingerling trout can be purchased from various commercial hatcheries in New York and neighboring states. A list of these hatcheries is available on request from the State Conservation Department in Albany.

As to whether Spring or Fall fingerlings should be stocked—Fall fingerlings are generally preferable, chiefly because they give more predictable results. If you buy your fish from a commercial hatchery, Spring fingerlings will generally cost about 25 per cent more than the Fall fingerlings needed to produce the same number of 8-inch trout to start off the fishing season. For restocking, Fall fingerlings are definitely preferable, since they are so much less vulnerable to predation by the old hangers-on from the previous planting.

To obtain the maximum amount of fishing, the number of trout stocked should be that which will give the greatest poundage the pond can support without producing stunted fish. Although this upper limit has not yet been determined, the information obtained thus far indicates that at least 600 Fall fingerlings (or 2,400 Spring fingerlings) per acre can be stocked in the average New York farm pond. There is some evidence that ponds less than a year old, and those located on exceptionally low-lime soils at high elevations may not always give satisfactory growth when stocked at the above rate. In these cases, 300 Fall fingerlings per acre might be a better figure to start with. However, the optimum stocking rate for a particular pond can only be determined by trial.

It's important to remember that there is a limit to the number of trout governmental agencies can supply gratis to our rapidly growing population of farm ponds. Currently this limit is 300 per acre. More fish can always be purchased from a commercial hatchery by the pond owner wishing to obtain maximum trout production.

Harvesting the Crop

A look at the high point on the graph's red line shows that an owner bent on harvesting maximum poundage of trout from his pond would try to catch them all out in Autumn of the first year following stocking—no sooner, no later. Hardly a *sustained* yield! On the other hand, the graph shows that most of the trout will have died of natural causes by October of the second year after stocking. Two conclusions follow from this: First, the pond must be restocked *every other year* to provide adequate fishing. Second, if the owner doesn't catch the trout, Mother Nature will beat him to them.

The importance of harvesting farm pond trout before they die of natural causes is often overlooked. Take the case of Mr. Dingell and Mr. Johnson who start out with identical one-acre ponds each stocked with 600 Fall fingerlings. The first year after stocking, Mr. D. harvests 165 fish, but Mr. J., playing it cagey, is going to let his fish get big before he does any fishing, and *then* clean up! The second year, both men fish equally hard, with equal success, and catch equal percentages of their remaining trout populations. Natural deaths take place at the same rate in both ponds. The numbers of fish caught and remaining in the ponds of Mr. Dingell and Mr. Johnson would look like this:

	MR. DINGELL	
	Caught	*Remaining*
First year after stocking	165	115
Second year after stocking	35	5
Total catch	200	(85 lbs.)

	MR. JOHNSON	
	Caught	*Remaining*
First year after stocking	0	230
Second year after stocking	70	10
Total catch	70	(52 lbs.)

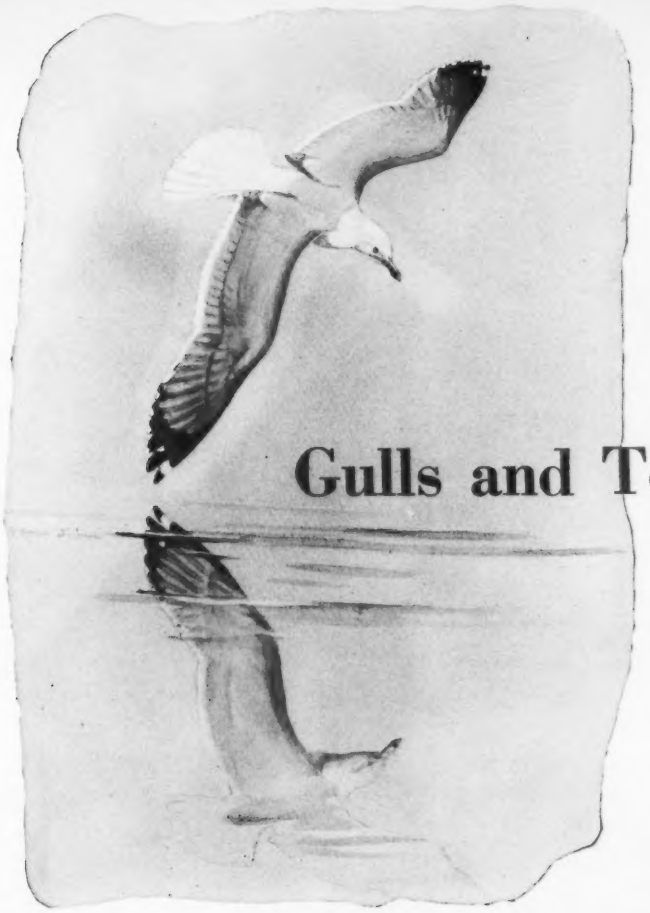
Although Johnson caught twice as many 2-year-olds as Dingell, Dingell's total catch for the two years was nearly three times greater in numbers, and about 70 per cent more by weight. The difference between numbers of fish left in the two ponds at the end of the second year was insignificant.

If a trout pond owner plans to manage his pond on a "two-year rotation," restocking every other Fall, it's wise policy to catch as many of the 2-year-olds as possible, for two reasons. First, a low population of "holdover" fish makes for better survival of the next planting. Second, you can expect only about a fifth of those holdovers to get through another year of pond life.

Trout pond fishing is markedly better in Spring and Fall than in the mid-Summer months and owners should take this into account in planning the harvest of their trout crop.

To take full advantage of Spring and Fall fishing opportunities, the owner of a trout pond should obtain a farm fish pond license, available at no charge upon application to the Conservation Department. With this license, an owner and his family can fish their pond without regard to the usual restrictions on numbers or seasons.

And don't forget the ice fishing! Turkey and goose may be traditional, but at least one family had a dozen 12-inch rainbows for Christmas dinner last year. Operating under their Farm Fish Pond license, these were taken on worms by the pond owner and his son in just 45 minutes, about 100 paces from the house.



Gulls and Terns of New York

by Dr. Kenneth C. Parkes,
Carnegie Museum, Pittsburgh

ONE of the few birds that our old friend, "the man on the street," usually feels qualified to identify is the "sea gull," particularly if his street happens to be in New York City or elsewhere along the coast. The only trouble is that the "sea gull" as a species, is as non-existent as the "chicken-hawk". It's not difficult, of course, to identify a bird of this group as being *some* kind of gull but from that point on it gets a little harder. More than a dozen species of gulls have been recorded in New York State and some of these, particularly in their various immature plumages, present exceedingly difficult problems of field identification.

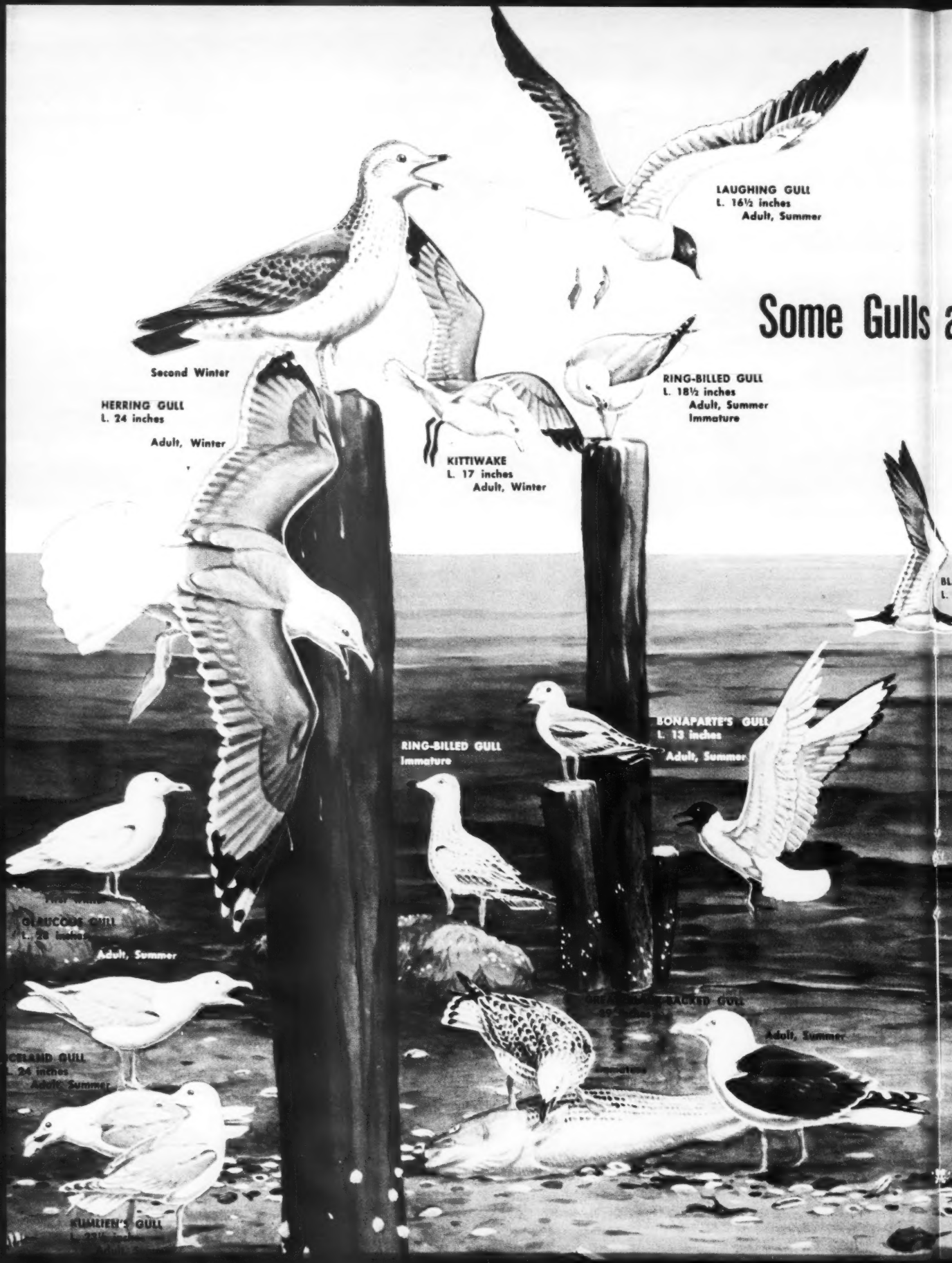
Although terns are quite differently proportioned from gulls, fly and feed in a different manner and are distinctive in several other ways, nevertheless they are placed with the gulls in the bird family Laridae. The Black Skimmer, included in this article, is placed in the family Rynchopidae by itself, but is closely related to the gulls and terns. All of these birds have many things in common. All spend much or most of their time near water (although not necessarily the sea). Almost all (exceptions will be mentioned later) nest in colonies, laying heavily-marked eggs in a rather flimsy excuse for a nest on the ground. All the members of this group have webbed feet and long, pointed wings and are magnificent flyers. Fish is the largest single item in importance in their diet, but many will feed on almost any item of animal origin, including insects, small mammals and all sorts of carrion and garbage. In fact, their taste for such jetsam as dead fish, partially eaten hot dogs, etc., entitles the gulls to equal rank with vultures as important natural scavengers.

As might be expected, the best area in New York State to study gulls and terns is along the Atlantic Coast, including Staten Island, New York Harbor and Long Island. More species nest on Long Island and smaller adjacent islands than in any other single region of the State. This is also the most favorable region for the rarity-hunter, who may hope to see stray individuals of European species which have crossed the Atlantic, or southern species blown north by a storm. Nevertheless, there are excellent areas in other parts of the State where gulls and terns may be studied. The Great Lakes are particularly favored; many rarities have been reported from the Niagara Frontier. Another favorite place for nesting colonies are the islands at the eastern end of Lake Ontario. A good description of these island colonies (now somewhat out-of-date because of greatly increased population counts in recent years) was given by John B. Belknap in "The Kingbird," Vol. 1, No. 1, November-December, 1950. The reader is also referred to a more recent article by Belknap, "The Ring-billed Gull," THE CONSERVATIONIST, Dec.-Jan., 1957-58. Other good areas to see gulls and terns include most of the larger bodies of water within the State, as well as the more extensive marshes.

As mentioned previously, several species of gulls and terns whose ranges do not normally include New York do turn up from time to time within our borders. Beginners (and even experts) would do well to use great caution in identifying a strange-looking gull or tern, however, until they are thoroughly familiar with all of the possible species, and with the range of variation of plumage of the commoner birds. The definitive, or "adult" plumage of most gulls is not attained until the third or fourth year, and birds in the various transitional stages can be most confusing. In addition to plumage differences correlated with age, there are also seasonal changes in both gulls and terns. Those species with black heads or black caps lose most of these distinctive marks in the Winter, for example. Many of the white-headed gulls develop gray streaks on the head and neck in Winter plumage, as illustrated by the adult Herring Gull in the colored plate.

So little is known about the plumage cycles of some of our gulls that actual museum specimens exist which have defied all attempts at final identification. One of the chief sources of difficulty in studying the relationships of gulls is that so many of them breed only in relatively inaccessible areas of the Far North. Whereas the plumage stages of our locally-breeding species, such as the Herring and Ring-billed gulls, can be worked out with banded birds of known hatching date, hardly any extensive banding has

(*Continued on page* 26)


LAUGHING GULL
L. 16½ inches
Adult, Summer
Some Gulls a
Second Winter
HERRING GULL
L. 24 inches
Adult, Winter
RING-BILLED GULL
L. 18½ inches
Adult, Summer
Immature
KITTIWAKE
L. 17 inches
Adult, Winter
BONAPARTE'S GULL
L. 13 inches
Adult, Summer
RING-BILLED GULL
Immature
Adult, Summer
Adult, Summer

lls and Terns
of New York
CASPIAN TERN
L. 21 inches
Adult, Summer
LEAST TERN
L. 9 inches
Adult, Summer
COMMON TERN
L. 15 inches
Adult, Summer
BLACK SKIMMER
L. 18 inches
Adult, Summer
COMMON TERN
Immature
Adult, Summer
Immature
BLACK TERN
L. 9½ inches
ROSEATE TERN
L. 15½ inches
FORSTER'S TERN
L. 14½ inches
Immature

(*Continued from page* 23)
been carried on in Arctic breeding colonies.

Almost all of our gulls and terns are strongly migratory. The Herring Gull, (the species that most people refer to as the "sea gull") is about the only species which is abundant in New York at all times of the year. Even so, individual Herring gulls may make long migratory flights. The most famous migrant of the family, and perhaps among all birds, is the Arctic Tern. This species spends its time during summers in the northernmost parts of the Northern Hemisphere, then migrates to the opposite end of the world, almost to Antarctica during the Southern Hemisphere's summer. Since the normal migration route of the Arctic Tern populations of eastern North America (as shown by capture of banded individuals) takes the birds out across the Atlantic and then south along the west coast of Africa, it is only by the rarest accident that an occasional Arctic Tern ever turns up in New York.

New York lies within a rather frequent path of hurricanes, as many readers of THE CONSERVATIONIST well know from personal experience. These tropical storms as well as weather disturbances of less severe intensity often carry southern birds to our latitudes. Gulls and terns, particularly the Sooty Tern, are among the most frequent of these involuntary visitors. Bird-watchers have learned to make an especially thorough search of the Long Island beaches after these storms and are not infrequently rewarded by sighting "strangers" to our shores.

On the double-page colored plate are portrayed the gulls and terns (plus the Skimmer) most regularly seen in New York. The back cover illustrates eight of the rarities that have been recorded within our State. Brief comments concerning distinguishing characteristics of the species illustrated in the centerspread and on the back cover, something of their habits and the manner in which these gulls and terns present themselves here in New York follow:

The Gulls

GLAUCOUS GULL *(Larus hyperboreus hyperboreus)*. Averages slightly larger than the Great Black-backed, and thus is our largest gull. A Winter visitor from the Arctic, this pale species closely resembles the Iceland Gull but is larger, with a proportionately heavier bill. On inland waters the Glaucous Gull is seen much more frequently than is the Iceland, but the reverse tends to be true in the New York City region. Glaucous gulls may be expected here in New York between October and March, but non-breeding individuals occasionally linger on into the Summer.

ICELAND GULL *(Larus glaucoides glaucoides)*. This species, about the size of the common Herring Gull, is another pale Winter vistor from the Arctic. The name Iceland Gull is a misnomer, as the species does not breed in Iceland; its principal Summer home is Greenland. Although quite similar in color to the Glaucous Gull, most evidence indicates that the Iceland Gull is more closely related to the Herring Gull. Instead, the Glaucous, despite its pale color, is related to our other large species, the Great Black-backed Gull. The Iceland Gull is more common during mid-winter months in our latitude than the Glaucous but there are occasional records of its presence throughout most of the year.

KUMLIEN'S GULL *(Larus glaucoides kumlieni)*. This gull has had a checkered history. Described as a new species in 1883 by the famous ornithologist, William Brewster, it was later considered to be a hybrid between the Iceland Gull and the Arctic subspecies of Herring Gull called Thayer's Gull. Further investigation exploded this theory, since the two supposed "parents" of Kumlien's Gull do not nest together anywhere. Furthermore, pure breeding colonies of Kumlien's gulls have been observed on Baffin Island. At present, the Kumlien's and Iceland gulls are considered to be subspecies of a single species; in the definitive (third-year) plumage the Kumlien's has gray markings on the wingtips which are absent in the Iceland Gull (*see plate*). The plumage stages of younger birds of these forms are little known and very confusing. Although the breeding range of Kumlien's Gull lies west of that of the Iceland Gull, Winter records of the former tend to place the subspecies along the coast, while the Iceland Gull is found more commonly inland.

GREAT BLACK-BACKED GULL *(Larus marinus)*. This descriptively named species is best known in New York as a rather common Winter visitor to larger bodies of water throughout the State. It has increased greatly in numbers over the past couple of decades. In addition, our State marks the southernmost limit of the breeding range of the Great Black-backed Gull. It was discovered nesting in 1942 on Cartwright Island, off eastern Long Island, and now nests in small numbers, in addition, on the south shore of Long Island as far west as Moriches Inlet. Non-breeding individuals not uncommonly linger into the Summer, both along the coast and on inland lakes of the State. Its large size and "saddle-back" color pattern make this species unmistakable.

LESSER BLACK-BACKED GULL *(Larus fuscus graellsii)*. This European gull resembles the Great Black-backed in color, but is smaller, the size of the Herring Gull. There are several subspecies, but those which have been collected in North America have been *graellsii*, the race of the British Isles. One specimen has been collected in New York (Buffalo) and another in nearby Rutherford, N.J. The best place to look for this trans-Atlantic rarity is among the flocks of gulls congregating at the Staten Island garbage dumps.

HERRING GULL *(Larus argentatus smithsonianus)*. This is the most abundant and best-known of our gulls and is usually used as a basis of comparison in identifying other gulls. It is a member of a world-wide group of medium-large gulls which are so closely related to one another that all have been placed in a single species by some ornithologists. The usual treatment is to divide the various populations among three species, the Iceland, Lesser Black-backed, and Herring gulls. Two subspecies of the Herring Gull group breed in North America, one of which is strictly Arctic. In New York, the Herring Gull nests on islands in Lake Ontario, Lake Champlain, the Adirondack lakes, the St. Lawrence River and along much of the south shore of Long Island. It has been increasing in numbers in recent years, often at the expense of smaller species. Non-breeding individuals are often seen throughout the Summer on bodies of water other than the known breeding areas. This species is an abundant migrant and Winter resident throughout the State.

RING-BILLED GULL *(Larus delawarensis)*. In actual numbers of individuals, this is the most abundant *breeding* gull in New York at present. This is a remarkable change of status; when E. H. Eaton published the first volume of "Birds of New York," in 1909, the Ring-billed Gull was known in the State only as a rare transient. The history of this species in New York has been summarized by Belknap ("Kingbird," Vol. 5, No 3, October, 1955). When the colony on Little Galloo Island, in eastern Lake Ontario, was discovered in 1946, some 1,000 pairs were present. By 1955 there were 45,000 pairs—the largest concentration of this species in the Northeast. Ring-billed gulls also nest on other islands in Lake Ontario, on Mohawk Island in Lake Erie and on islands in Lakes Champlain and Oneida. Most of this population leaves New York for the Winter, yet goodly numbers remain in most parts of the State even at this season. Smaller than the Herring Gull, which it resembles in general coloration, the adult Ring-bill may be recognized by the color of its bill and feet. Young Ring-bills have a blackish band near the tip of the tail, narrower and more sharply defined

than the similar mark of the young Herring Gull.

BLACK-HEADED GULL *(Larus ridibundus ridibundus)*. An Eurasian species which has often crossed the Atlantic. In recent years it has become a regular visitor to the New York City region, from one to three individuals being reported annually, usually around sewer outlets opening into New York Bay. It inevitably associates with Bonaparte's gulls and closely resembles the latter species. Somewhat larger than the Bonaparte's, the Black-headed Gull is also darker on the *under* side of the wing (*see colored plates*). This species expanded its breeding range westward to Iceland about 1910 and has been increasing there ever since, probably accounting for the increase in records from the eastern United States.

LAUGHING GULL *(Larus atricilla)*. This beautiful gull nests both to the north of New York (south to Massachusetts) and to the south (southern New Jersey). There is no record of its breeding in New York, however, since about 1888, when the Long Island colonies were wiped out by plumage-hunters. It may be seen all through the Summer, however, along the coast; a few individuals may linger into Winter. Like the other gulls of the "black-headed" group, the Laughing Gull tends to build a more elaborate nest than do the typical gulls, constructing a pile of vegetation in a marshy area. This species is almost unknown in New York farther inland than the lower Hudson Valley, appearing only rarely after severe storms.

FRANKLIN'S GULL *(Larus pipixcan)*. This is strictly an inland gull, breeding on fresh-water marshes east to Iowa. A few individuals stray almost every Fall from the normal migration route down the Mississippi Valley, and follow the Great Lakes as far as the Buffalo region. The first specimen for New York was found dead on October 15, 1939, at the mouth of the Genessee River on Lake Ontario. There are a very few sight records of this species elsewhere in the State, including Long Island, by usually reliable observers. Although superficially similar to the other gulls of the "black-headed" group, Franklin's Gull may be recognized by its distinctive wing pattern (*see plates*).

BONAPARTE'S GULL *(Larus philadelphia)*. The smallest of our native gulls, this species is an abundant migrant on the larger bodies of water in New York; less common elsewhere. Small numbers sometimes spend the Winter on Long Island waters and occasional individuals have been recorded in Winter in other parts of the State. Bonaparte's gulls are particularly common in Fall in New York Harbor. During a ride on the Staten Island ferry at this season of the year, one may see hundred of this species, skimming along just above the surface of the water. The Bonaparte's Gull may be readily identified at any season by the wedge-shaped white mark at the outer end of the wing, shared only by the rare Black-headed Gull *(see plate)*. This species nests in Alaska and northwestern Canada, having the unique habit among gulls of regularly building its nests in trees.

LITTLE GULL (*Larus minutus*). This European species, of which an immature individual is illustrated on the back cover, was a very rare but quite regular visitor, usually in the Spring, to New York Harbor between about 1929 and 1950. In recent years, however, it has appeared less frequently. In the Great Lakes area, particularly the Niagara Frontier, Little Gulls began to appear about 1938, but here they are usually seen in Fall. In both places the species associates with the slightly larger Bonaparte's Gull. The only record of the Little Gull in New York other than along the Great Lakes or the Atlantic coast is a bird collected on Cayuga Lake on May 20, 1916. Adults *(shown on plate)* have blackish wing-linings, while the striking pattern illustrated, together with the small size, will suffice to identify the immature birds.

BLACK-LEGGED KITTIWAKE (*Rissa tridactyla tridactyla*). Most gulls seldom venture very far out to sea, but the Kittiwake is truly a bird of the open ocean. It is a common and regular Winter visitor in our latitude, but comes into shore so seldom that it is rarely seen even along the coast of Long Island except after a storm. There a number of isolated records from the Great Lakes and a few from other inland areas. These birds may have been blown inland by storms, or may have come from the population which breeds along the Gulf of St. Lawrence, the river being an obvious route to the lake country of New York. Unlike our other gulls, the Kittiwake nests on ledges of cliffs. The adult is easily recognized by the clear-cut black wingtips, without white spots. The young bird has a striking pattern much like that of the immature Little Gull shown in the plate, but is much larger than the latter species.

The Terns

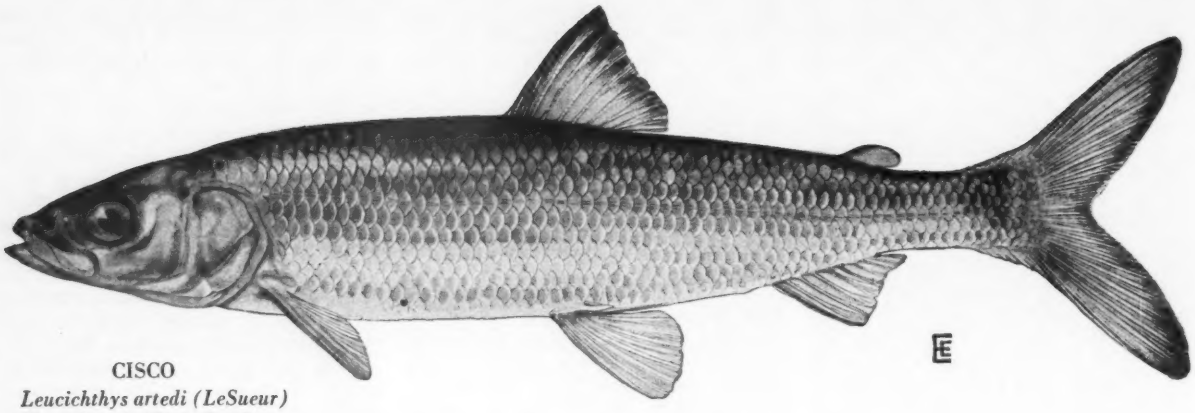
GULL-BILLED TERN (*Gelochelidon nilotica aranea*). This is a southern species, nesting along the Atlantic coast as far north as Maryland. It is one of the birds usually reported along the south shore of Long Island after hurricanes and is occasionally seen in that area in late Summer or Fall even when no storm has occurred. It has not been reported from any inland New York locality. The illustration does not show to best advantage the stout, gull-like shape of the bill of this species—its best field mark in distinguishing it from the Common and other local terns. Well shown, however, is the markedly less deeply-forked tail.

FORSTER'S TERN (*Sterna forsteri*). This fine tern has two distinct breeding areas; the salt marshes along the Gulf and Atlantic coasts north to Maryland, and in the great prairie marshes of western North America. The birds of this species which appear almost every Fall along the Niagara Frontier (rarely elsewhere in the interior of New York) probably derive from the fresh-water population of the west, while the Fall visitors to Long Island (where Forster's Tern is fairly common and sometimes occurs in large numbers) are probably primarily from the coastal population. Once considered to be almost indistinguishable in life from the Common Tern, identification of Forster's Tern is, with a little experience, quite easy. When the two are side-by-side, Forster's is seen to be a heavier bird. It has a distinctive silvery color on the primary wing-feathers and a grayer tail, with the outermost feathers palest (the reverse is true of the Common Tern). In the Fall, both adult and immature Forster's Terns have a black mark through the eye and ear region which does *not* continue around the back of the head as it does in the Common.

COMMON TERN (*Sterna hirundo hirundo*). As the name implies, this is by far the commonest of our "sea-swallows," and can be seen diving for small fish in almost any of our larger bodies of water, both fresh and salt. It nests in colonies along the shores and islands of the Great Lakes, on the Thousand Islands, the Niagara River, Oneida Lake and other areas in central New York, and along the south shore of Long Island. In many places the colonies have become much reduced as beaches have been developed as resorts, and on Long Island some tern colonies have been usurped by Herring Gulls. The Common Tern may also be found as a common transient, both Spring and Fall, on almost any good-sized body of water in New York.

ARCTIC TERN (*Sterna paradisaea*). This famous migrant is so similar to the Common Tern in appearance, and so rare in New York (thus giving it a high desirability on bird-watchers' lists)

(*Continued on page* 35)



CISCO
Leucichthys artedi (LeSueur)
From female 8¾ inches long

Ciscos Anytime

by A. C. Petty, *District Fisheries Manager*

SWIMMING around in the clear cool depths of the Great Lakes and some of the deeper inland lakes of New York there's a lot of big-eyed stream-lined, silvery characters called ciscos. Bandy this name around among the non-angling fraternity and people will probably assume that you are mispronouncing the name of a popular vegetable shortening. But fishing fanatics will know better and the more fortunate will know this chap first hand as a delectable member of the whitefish family.

Unfortunately, though, the cisco's circle of fishermen friends is quite limited—no doubt to that species' quiet satisfaction but also the average angler's deep loss—for the cisco needs catching and eating to be appreciated as the cold water aristocrat he really is.

Until comparatively recent years, ciscos were only taken accidentally, one might say, from their deep-water realm by ice fishermen after their close relatives—smelt—and sometimes by whitefish anglers. One locally-renowned exception to the rule is the annual, late Spring campaign by fly fishermen at Owasco Lake. There, during a ten-day or so period along about mid-June, ciscos are found surface feeding on the hatch of the burrowing mayflies or eel flies as they are known in those parts. But except for such flurries, though, the harvest of the cisco was sporadic at best. Or such was the case until recent years, for you can't frustrate fishermen forever and they are closing in these days on this elusive prize—to their own benefit and, incidentally, to the benefit of the cisco population as well.

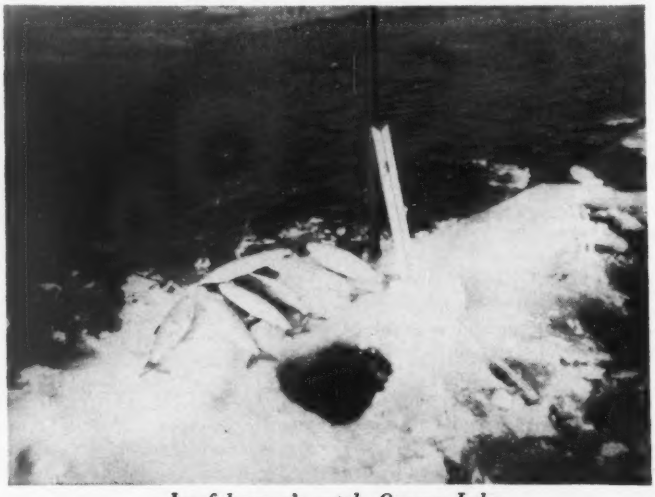
We aim here to tell you how it's being done. To set the scene we shall describe operations at two of our best central New York cisco headquarters—Hatch and Owasco lakes:

Hatch Lake

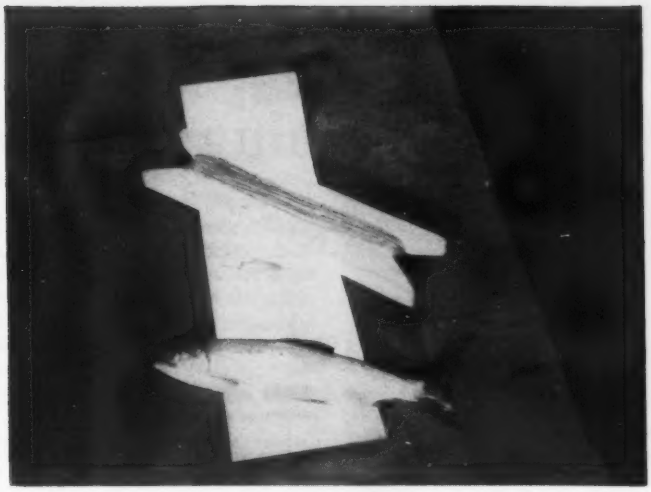
Hatch Lake, located in the south-central part of Madison County, has a surface area of approximately 150 acres. It is a natural lake, the water level of which has been raised about 10 feet to furnish additional water to the Barge Canal. In addition to the cisco, which is probably the most abundant species in the lake, some warm-water fish including largemouth bass, smallmouth bass, pikeperch, pickerel, yellow perch, bullhead and sunfish are also present. More than half of the area of Hatch Lake is over 40 feet deep with a maximum depth of about 62 feet. There is relatively little shallow water with most of lake's volume composed of cold water.

A couple of decades ago, an attempt was made to manage Hatch for lake trout and in this connection ciscos were introduced to furnish forage for them. Unfortunately, the lake trout were not successful but the ciscos became well established. Since the termination of that experimental period, the lake has been stocked with pikeperch but only an occasional walleye pike is reported by fishermen. More recently (1957) an experimental stocking with splake was carried out but it is too early to report on the success of this new introduction.

At the present time, the cisco is the backbone of fishing in Hatch Lake. It is true that somewhat specialized tackle and



Ice fishermen's catch, Owasco Lake



The rig and a Hatch Lake cisco

a special fishing technique is required but on the other hand, 10 years ago this fish was not caught by anglers in this water. Characteristic of fishermen, though, they kept right on trying every trick in the hat to outwit this finny fellow. Deep trolling with monofilament line and a small spinning lure gave the first indication that ciscos could be taken with a fair degree of success. The present rig, now in most general use at the lake and which has been proven to work when properly handled, is the lead-core line with gold or silver metal spinning-type lure. The lure may be in the form of a small fish or in the shape of a conventional spoon. The fishermen who have mastered the art vary as to their choice of color and shape of lure but most of them agree that when the fish are really hitting it is a toss-up. The lead-core line may be rigged on a reel with a large diameter spool mounted on a stubby rod or a less fancy "reel" can be improvised at home by notching each end of a short piece of ½" x 3" wood stock. A short piece of monofilament leader connects the lure to the line.

Of equal or possibly greater importance than the tackle is the method of presenting the lure to the fish. Most of the successful cisco fishermen handle the line directly with their hands and employ a rod and reel merely as a convenience for holding and storing the line in an orderly manner. The trolling is done at a slow speed in deep water with a short rapid pull on the line alternating with a relaxing of the line to its original position. In this way the lure makes short arcs in the water. Varying the length of the line or the trolling speed will determine the depth at which the lure operates.

At first, only a few local fishermen were aware of the fishing opportunity here but gradually others have "found" Hatch Lake and enjoy cisco fishing. Families who rent cottages on the lake for short periods during the Summer are soon able to hit pay dirt and know that this type of fishing is not reserved for the experts. It should be remembered that ciscos are no different than any other fish in that there are times when even the most persistent angler will go home empty handed. When they are hitting well, 30 or 40 fish may be taken during one fishing trip. Catches such as this are usually made in early morning and fishermen out for "blood" concentrate their efforts at this time of day.

Ciscos are known to be plankton and insect feeders but since they strike at metal lures it seems logical to assume that small fish might at times appear on their menu. A check of their stomach contents bears this out. In July, for instance, cisco stomachs were found crammed with young-of-the-year yellow perch. In late November when they enter shallow water around the shore to spawn, their abundance can be more readily appreciated. There is no closed season, size limit or creel limit on this fish. Anyone wishing to join the "Cisco Kids" at Hatch will find boats for rent and may obtain the specialized fishing tackle at the lake.

Owasco Lake

The late Spring fishing for ciscos in Owasco Lake is well known to many fishermen but many don't realize that a Winter fishery exists for this species on the same lake. A technique for taking ciscos has been developed in the past few years by that hardy variety of angler, the ice fisherman. Jigging for various species of fish is not unknown to Winter fishermen but it is a relatively new and novel method for taking ciscos. The lure probably most often referred to as a jig consists of a single hook with heavily weighted shank surrounded by a tuft of hair or feathers. In ice fishing for ciscos on Owasco, a jig can be any one of a multitude of different lures. Here a lure becomes a jig by reason of its use. The spinning lure such as described in connection with Hatch Lake fishing again comes into play in an unorthodox manner.

The most important prerequisite to this sport is an adequate ice covering and during a mild Winter this may not be forthcoming on Owasco. Most cisco ice fishermen feel that fishing is best over water that is about 40 feet deep and toward the south end of the lake is probably the most popular area. Some fishermen hold the line with their hands while others prefer the conventional rod or even a short stick. The jigging operation is often started near the bottom and is continued upward to the ice. It consists of moving the lure slowly from bottom to top an extended series of jerks on the line. The theory behind this is that the ciscos are more or less concentrated at certain levels and the problem is to ascertain the correct depth for intensive fishing. In practice this has worked out well for some of the best fishing has been at levels of from 10 to 20 feet below the ice. In many respects fishing for ciscos in Winter is no different than other ice fishing since it can be fraught with hardships. However, ice fishing is an efficient medium for separating the men from the boys and you can usually depend upon it that the fellow huddled over the ice hole is a rugged individual. It has been noted almost without exception that an ice fisherman will still go home happy with little or nothing in his creel, but at Owasco under optimum conditions he may well have cause for jubilation. When the ciscos co-operate whole heartedly with the fisherman, from 50 to 100 or even more may be taken in a single afternoon. Mental flash-backs of this kind of fishing help to while away the hours when the ciscos just "ain't."

In spite of occasional large takes, it is felt that in most cases throughout the State, ciscos are grossly underharvested and a potential exists here for increased sport and food. Let's hope that at the end of another seven years while you are hurtling through space on your way to that fishing trip in the valley of the moon that the earth-bound Waltonians will have come up with some new cisco fishing techniques. If they prove worthwhile you can depend on it that they will be passed on to you.

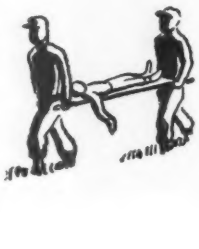
Hunting Accidents and Hunter Training — 1958

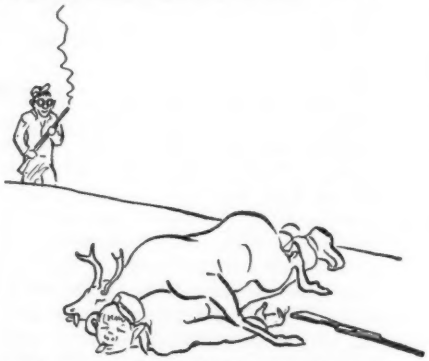
by Bryan E. Burgin

NEXT season will mark the tenth year of this Department's Junior Hunter Training Program, conducted in co-operation with the National Rifle Association and some 2,500 authorized volunteer instructors throughout the State. At the close of last year (1958), 207,554 minors had received instruction under this program and had been certified to secure their first hunting licenses, according to reports to N.R.A. in Washington, D. C., from the New York instructors. Actually, there is little doubt that the total number of minors instructed is nearly 300,000, since some instructors fail to report students trained. The report for 1958 was 49,455 new hunters certified.

Never has a program of conservation and education instituted by this Department been better received. Pioneered here in New York in 1950, the program (with variations) has subsequently been adopted by 26 states scattered throughout the U. S. and by the Province of Ontario, Canada. There is no doubt that ultimately the program will be country-wide in scope.

Here in New York, the time is at hand not only to review the progress made, but to adjust our sights and administrative procedure, on the basis of experience, to handle the Hunter Training Program more efficiently. To this end, agreement has been reached with the National Rifle Association to discontinue this Department's dependence upon the Washington office of the N.R.A. for stenographic and clerical services involved with the examining, certifying and registration of volunteer hunter training instructors. Experience has demonstrated that better, swifter and more efficient service can be rendered to minors in this State, required to take the course, and to the N.R.A. instructors if this Department undertakes the essential stenographic and clerical responsibilities, rather than N.R.A. The National Rifle Association, for its part, is happy with the arrangement. It's in accordance with the manner in which all other co-operating states are operating and it will relieve N.R.A. of bothersome bookkeeping and clerical details, as well as much letter writing. April 1st of this year is the transfer date. All inquires for information regarding Hunter Training, requests for supplies and reports of the numbers of students trained should be now addressed to Hunter Training Program, Division of Conservation Education, State Campus Site, Albany.





The New York State Field Archers' Association is co-operating with the Department in working towards an archery safety program, comparable with that now operating in New Jersey.

As soon as arrangements can be made a series of training sessions for instructors will be held in each county. We also hope to better co-ordinate the work of the instructors in the centers of population to cut down the huge last-minute rush of students, to assist instructors in scheduling and advertising classes and to make it easier for the instructors and the students.

Manner of Accidents

How Injured	*1956*	*1957*	*1958*
Self-inflicted	39	39	39
Shot by Companion	93	73	87
Unknown	11	13	15

Accidents re Game Pursued

Game Hunted	*1956*	*1957*	*1958*
Big Game	21	12	35
Small Game	84	53	80
Others & Unknown	38	60	26

Causes of Accidents

Causes	*1956*	*1957*	*1958*
In Line of Fire	58	18	41
Carelessness	25	45	31
Ricocheting	19	6	11
Mistaken for Game	6	2	16
Loading or Unloading Gun	7	0	4
Others & Unknown	28	54	38

Hunting Accident Summary

Year	*Fatal*	*Non-Fatal*	*Total*	*Licenses*	*Accident to License Ratio*
1953	7	105	112	903,646	1 : 8068
1954	10	110	120	938,716	1 : 7823
1955	12	118	130	972,399	1 : 7480
1956	11	132	143	1,016,577	1 : 7209
1957	12	113	125	1,077,825	1 : 8624
1958	13	128	141	1,231,618	1 : 8735

The Air Around Us*

UNTIL after the time of Christopher Columbus, most people believed that this world was flat, like a table top. Some of the ancient Greeks, however, had reasoned that the earth was round and that the canopy of air above them was part of another sphere surrounding this planet. They used two words to describe it—*atmos* (vapor) and *sphaira* (sphere). We know now that they were right. There is a gaseous envelope which, held by gravity, clings to the earth and follows its every movement. We commonly call it "the air."

The air we breathe is the commonest thing on earth and, although free, the most precious. There is an old proverb: "A man can live three weeks without food, three days without water, but only three minutes without air." None of us, nor any of the animals and plants, could exist without our atmosphere. It furnishes us with those elements necessary for all life: Oxygen, nitrogen, carbon dioxide and water vapor. It filters and protects us from the killing rays of the sun. We live beneath the roof of a gigantic greenhouse.

Without our atmosphere there would be no winds, no clouds, no rain, no colorful sunrises and sunsets—in other words, no weather at all and consequently, no climate. In daytime, as on the moon, the sky would be black—not blue—and the temperature would zoom to 230° F. or more. At night it would plunge to possibly 300° below zero. This would be a lifeless world.

Near the earth's surface, perfectly dry air contains about 78 per cent nitrogen, 21 per cent oxygen, and 1 per cent of argon—a peculiar inactive gas, small amounts of carbon dioxide and hydrogen, and tiny amounts of five rare gases: Neon, krypton, helium, ozone and zenon. Normally, however, air also contains water vapor in quantities varying from a mere trace to about 5 per cent on hot humid days, and it is responsible for the clouds, fogs, rain, snow, hail, dew and frost. At altitudes of more than 5 miles there is very little of it because of the low temperatures. In addition, our air contains various amounts of impurities such as dust, soot, pollen, spores, bacteria, salt particles from sea spray and—especially near industrial areas—poisonous gases.

The density of the atmosphere diminishes rapidly with altitude. Six miles up it is so thin that a man cannot breathe; at 12 miles there is not enough oxygen to keep a candle burning; at 400 miles,

When the Earth was new

in the almost airless Mesophere, the main ingredients are probably hydrogen and helium, the two lightest gases.

Data obtained from radio waves, balloons and missiles indicate that, for convenience, the atmosphere may be divided into five layers or concentric spheres around the earth. They are chiefly distinguished by the temperatures in them but each merges gradually into the one above it. The lowest layer, roughly 7 miles high, is the Troposphere where most of our weather is generated and which contains the air we breathe.

Above that is the Stratosphere, extending to an altitude of about 20 miles, and then the Chemosphere where the sun's ultraviolet rays are screened from the earth by the ozone gas they produce. The space between altitudes of 50 and 250 miles is called the Ionosphere. Above it, and extending to possibly 600 miles above the earth, is the Mesosphere. Beyond that is the Exosphere merging into outer space where someday, like Columbus, men may explore.

Astronomers believe that none of the other planets—excepting Mars, perhaps—has an atmosphere anything like ours. The principal elements, free nitrogen and free oxygen, apparently are rare in the universe. On the other hand, the earth's atmosphere contains only traces of free hydrogen and helium—the two lightest gases—whereas they are by far the most common elements elsewhere in the universe.

Originally, those two gases must have been present here in vast quantities. What happened, and what was the origin of our atmosphere? The answer, according to modern theory, is that the earth has had other atmospheres which escaped; and that the latest one was slowly accumulated during eons of time.

Most scientists believe that our planet condensed from a whorl of star dust and gases into a flaming ball where the heaviest elements gravitated inward and lighter ones rose to the surface. Fiery spouts of gases, especially hydrogen and helium, jetted away into space. As the earth lost that heat, its surface gradually cooled and became a fluid crust with hardening islands of granite and basalt which eventually formed continents. Torrents of flaming lava errupted through innumerable weak spots in the crust, and also terrific jets of gases more complex and heavier than hydrogen and helium: Water vapor (as steam), carbon dioxide, and probably other compounds such as ammonia and methane.

These gases formed enormous hot clouds that grew and grew until they were many miles high, shutting out sunlight and shrouding the earth in perpetual darkness for perhaps millions of years. From their upper reaches into cold atmosphere, wave after wave of rains fell but boiled and became rising steam before they reached the earth's hot crust.

Thus, each rainfall sapped the earth of some of its heat energy and carried that upward into the clouds where it radiated into outer space. Other losses of heat and energy resulted from the awful lightning that must have been continual, and from the tremendous jets of fiery gases. The earth cooled until at last there came a time when the rains fell and did not boil away. Meanwhile the crust had heaved and wrinkled. When the clouds thinned and those deluges ended, the sun shone upon glittering seas collected in the depths.

Life apparently began, somehow, in shallow waters warmed by sunshine. Green plants developed until some emerged and grew along the beaches. Later, others invaded higher ground. Primitive animals developed in the seas and their descendants crept out to live on land. Green plants, in daytime, take in carbon dioxide and give off oxygen. At night the process is reversed. Animals consume oxygen and exhale carbon dioxide. As dead plants and animals decay, carbon dioxide is released into the air and nitrogen into the soil. However, because plants give off far more oxygen than they consume and take in far more carbon dioxide than they give off, the supply of oxygen in the air increased and that of carbon dioxide gradually dwindled.

The dust, smoke, fumes and nuclear explosions produced by modern civilization threaten to disrupt that vital cycle of use and renewal.

*From NATURE BULLETIN, Cook County, Ill.

Jim Kennedy tagging Christmas trees in thinning operation on Cortland #2, State Reforestation Area

Jim Kennedy

On March 1, 1930, five young men assembled in the old Conservation Department office in the DeGraff Building on South Pearl Street in Albany. They were: Milt Hick, Charlie Baker, Jim Kennedy, Irv Bowlby and Harry Dobbins. These were the original "District Foresters" — assigned the task of buying, surveying and reforesting a million acres of submarginal farm land. Over the years the five young men became known as the "five old men," of the District Forester group, now grown to fourteen.

The death of Jim Kennedy, on February 5, 1959 following a heart attack at his home in Cortland, is the first permanent break in the ranks of the "five old men," although two had recently retired from State service. Jim retired November 20, 1958 to become manager of the Greek Peak ski area which he had been instrumental in developing near Cortland.

Jim was born at Cunot in southern Indiana, the son of John D. and Nellie Kennedy. In common with many Hoosiers, Jim possessed a deep sense of humor and a penchant for aptly and plainly expressing himself — a quality that made you instinctively like and trust the man. His early schooling was in Quincy, Indiana, from where he moved on to Purdue University to become in 1923, one of the first graduates in forestry of that University. At Purdue, Jim won letters in track and cross-country.

Immediately after graduation, Kennedy entered the sevice of the United States Department of Agriculture as a Blister Rust Control Agent at Hudson Falls. In this work he was directly associated with the New York State Conservation Department for the first time. During 1927, Jim was assistant to H. L. McIntyre, at that time in charge of Forest Pest Control for the Department in Albany. From that position he moved in 1928 to Cornell University as acting Extension Forester, and in 1929 was appointed Professor of Forest Extension at the State College of Forestry, Syracuse. On March 1, 1930, he returned to the Conservation Department as a District Forester for District 3, with headquarters at Cortland.

A genial nature, together with a real talent for organizing, soon made him active in civic and church affairs in Cortland. He very early saw the possibilities for a ski center near Cortland and constructed a tow at Snow Crest in the Town of Virgil, near Cortland. From this eventually came the Greek Peak organization, of which Jim was manager and treasurer.

Surviving him are his wife, Vance Johnson Kennedy; a daughter, Mrs. H. Leon Taylor of Rochester; a son, James, recently returned from the Antarctic, and a granddaughter.

No greater monument could be erected to a man than the millions of trees Jim planted on the barren hills of Cayuga, Chemung, Cortland, Onondaga, Tioga and Tompkins counties. His contribution to the cause of conservation has been very real and substantial. His work was always done with grace, humility and extreme devotion to the cause and the people for whom he labored, and it is indeed a matter for sorrow among his friends that the time alloted him to enjoy his retirement proved so brief.

To have known Jim Kennedy over the years was a privilege we shall always cherish.—CHARLES E. BAKER, *District Forester, Norwich*

The Small Wood Lot

(*Continued from page* 5)

It indicates that the importance of all these practices is being recognized. But we may tend to forget that the real issue is whether incentives provided in these other areas are really improving harvesting practices.

Marketing

"And what about marketing and utilization practices, our second area of consideration? Our publication *Forest Practice Doings* provides some idea of market prices about the State, and timber owners can be appraised of market possibilities by State foresters, but beyond this, there seems to be relatively little current activity. Yet study indicates that two-thirds of all Northeastern sales are made without benefit of inventory, that two-thirds are made by owners without presale information on potential markets; that one-half of all sales are made without presale knowledge of the availability of public or private marketing assistance and that 80 per cent of all sales are made on verbal agreement to buy and sell. There is obviously a long way to go in equating the advantages of buyer and seller." The discussion:

Consultant (Northeast): "The most effective means of approaching the goal would be a subsidy for well managed wood lots . . . Wood lots cut under the direction of either the State forester or competent consulting forester would be elligible for consideration. Subsidy payments might be made at five-year intervals on certification by the State forester that the area remain in the eligible category."

Industrial Association (Mid-Atlantic): "If there is incentive, economic incentive for the private individual to do it, it will be done."

Manufacturer (Northeast): "A good many small forest owners cannot be sold on the idea of management because there simply are no markets available . . . Expansion in research must accompany and be correlated to the expansion in education, promotional and publicity facilities."

Industrial Forester (Northeast): "The owners, themselves, might be encouraged to solve their problems by forming an association or co-operative type of organization to harvest and market their forest products, plant trees, do timber stand improvement work and fight fires."

Timberland Owner (Northeast): "I would like to see closer co-ordination between our small tree people and our industrial ownership."

Industrial Forester (Northeast): "The motive that influences what an owner does with his woodland is his own degree of knowledge of trees, the market value

of his timber and his need for cash . . ."

Public Forester (Northeast): "The interest of the individual is to secure income and satisfaction from his forest lands to meet his requirements. Now and in the future."

Layman (Northeast): "I believe in economic incentives, to be applied to folks who are economically dependent upon the woods."

Manufacturer (Northeast): "There is no solution to it in subsidies . . ."

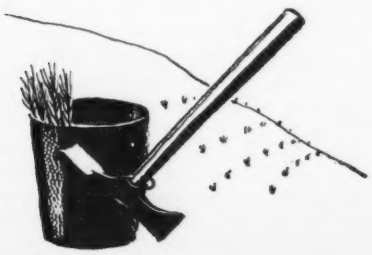
Educator (Northeast): "Group action can help by capturing markets which are otherwise not available to small, diverse ownerships, by bringing increased returns to the landowner and by getting technical service into the woods."

Public Forester (Middle Atlantic): "Priority of markets on the basis of good management would work, if industry is really interested in better woodlands for the future . . . We know we must get the woodland owners' interest and to most landowners money is all that talks."

Forestry and Land Use

The final topic introduced for discussion dealt with land use and the status of forestry in the developing competition for land. This subject was led by John Fedkiw, Assistant Professor of Forest Economics, of the College of Forestry at Syracuse. The following quotations are from his conference paper:

"What does the term 'best land use' mean? If we are to understand this term, we need first to appreciate that our society tends to emphasize private enterprise and competition as primary principles in our economic life. In general, we work to preserve and encourage these principles of a free economy, believing more or less that they are the safest and soundest determinants of what is economically best in a free democratic society. . . . In our economy, therefore, the best use of land tends to be determined *in practical life* by that use which can pay the highest price for land, and which can manage that land within such restrictions as may have been legally imposed by the will of the people through our governments. On the average, this system does work satisfactorily for us; otherwise, the system itself would not survive.

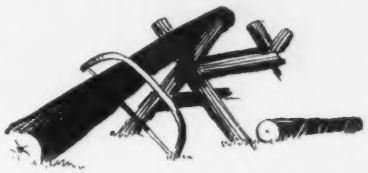


"However, through lack of knowledge or capital, or through erroneous knowledge, people do make mistakes or are unable to adjust the use of the land they own to changes in the economic system which alter the best use of their land. When mistakes and maladjustments in land use reach serious enough proportions to affect the public welfare, as they did in the Twenties and depression Thirties, our governments have stepped in with various programs to alleviate the problem and improve the land ownership and land use pattern. . . . In New York, for example, the people of the State in 1931 approved a policy to transfer to State ownership one million acres of private land, unprofitable for private agricultural use; and to alter the use more or less permanently from agriculture to forestry through reforestation.

"At about the same time, the New York State College of Agriculture at Cornell began to classify the lands of the State according to [its] productivity for commercial agriculture. This land classification was intended to provide a guide to direct people and farming investments away from low productivity areas where farming was risky to the more productive farm lands. It was and is a public service to help people make better decisions about the best land use. Generally, the Cornell Agricultural Land Classification is based on a verified knowledge of the income earning capacity of different kinds of land for commercial farming. The most productive farm lands have been classified as Land Class 6 or 7 and include such highly productive lands as the muck farms. Land Class 3 is that type of farm land which will produce just enough farm income to maintain the farm in business. 1 and Class 2 will not produce enough income per farm unit to maintain a successful farm business. [This] is the type of land which has been acquired and reforested by the State and which we foresters generally refer to as abandoned agricultural land. Land Class 1 is forested land.

"Forestry has been judged by many as the best use for Cornell Land Classes 1 and 2. But we have no studies in New York which are adequate to tell us objectively the earning capacity and suitability of such lands for private forest investment and management. Most of the areas that would fall in Land Class 1 and 2 are in private ownership today. For the most part the owners are lacking in knowledge of the income earning capacity of forest management investments on those lands. Often, I believe, we would find they are also lacking the capital to make such investments, even though we could predict their profitability objectively.

"Now let's take a look at what is going on about us with respect to forest land use. Prices for forest land (Cornell Land Class 1 and 2) range from $3 to about $15 per acre, probably averaging between $8 and $10. These prices ususally do not include any operable sawlog stumpage, but very often do include sapling and small pole growing stock up to several cords per acre.



"The prices I have mentioned do not necessarily reflect the productivity or earning capacity of wood lots and abandoned farm lands in forest use. They are the payment necessary to bring about an exchange between the seller and buyer. The market for such lands can generally be characterized as one in which there are many sellers, not very well informed about productivity of forest management and perhaps in need of capital and unburdening of fixed tax obligations. The buyers of such land for forest use, on the other hand, are relatively few, often well informed about forestry potential and usually not desperate to acquire timberland. The buyers, then, are more or less free to pick and choose, wait and see, until the price is right; they have the advantage in bargaining power. Under these circumstances of unbalanced knowledge and numbers among buyers and sellers, the market price is somewhat non-competitive and often not an adequate reflection of the productivity and earning capacity of former farm lands in forestry use.

"What are the uses with which forest land use is competing? They are agriculture, residences, industrial and business uses, non-forest recreation uses and road rights-of-way."

"As for the other competitive uses, there is little need for detailed discussion. Property useful for road rights-of-way, industrial or business use, residences, or non-forest recreation is ordinarily far more valuable than the going prices now being paid for forest production purposes. Once forest land is acquired primarily for one of the competitive uses, the problem of ownership is settled for the time being and the use made of any surplus land depends upon the knowledge and capital each individual owner has available and is willing to direct in such surplus land as he may own.

"Finally, we should recognize that, in one sense, forest land use has grown tremendously since 1880, when 23,000,000 acres of New York State land was in

(*Continued on page* 36)

the back of the book

Indian or wild ginger

Common Spring flower in the limestone areas of the state. Grows in rich woods often on or near limestone ledges. Rarely gets more than a foot in height. Brownish-purple flowers at base of leaves during April and May are often overlooked among the forest leaves. Plant furnishes suitable substitute for ginger and was often used by the early settlers.

What of tomorrow?

Our natural resources are the basis for our standard of living in the United States —the highest in the world. If future generations are to enjoy the same standards, considerably more planning, and action programs must be established to properly manage these resources.

To some it may seem impossible to do this in light of the fast increasing population. It is attainable though, according to C. H. Stoddard of "Resources for the Future," a study program financed by the Ford Foundation. He feels that the main conservation program could be accomplished for $20 billion, or a half of one year's defense spending. If it were spread over a decade it would cost about $2 billion annually to prepare our resources for future needs Here are a few ways he suggests that it be accomplished:

We have 650 million acres of forests at present and even if this amount is "tree farmed" we shall still need another 165 million acres from land not so useful for other purposes if we are to provide the 22 billion board feet of lumber that will be required annually by the year 2000 A.D. This compares to the 14 billion we are producing at the present time. The estimated cost of such a program would be $2 billion.

In soil conservation, one-third of this country's farm acreage is being farmed according to recognized soil conservation practices. Much of the remainder is so situated that individual farmers cannot do the job. Complete farm conservation would cost about $4.5 billion but it would repay the investment over and over and the gain in crops produced could better support the people of 2000 A.D.

Grazing acreage is still on the whole poorly used and suffering from severe over-grazing and erosion. An estimated $1 billion could put all this acreage into shape for supporting one-third more animals on a self-sustaining basis.

There are 35 million acres devoted to recreation besides many millions more that are incidentally used for this purpose. In the year 2000 A.D. it is estimated there will be 2 billion public visits to such areas as against 200 million in 1956. A planned expenditure of $2.6 billion could prepare for this.

To provide hunting and fishing areas for the increasing number of out-door minded public an expenditure of $3 billion could provide for continuation of a heritage sport that is, at present, heading toward extinction.

To make all the Nation's waters clear and wholesome and keep them that way would require somewhere near $6 billion and this might be the most important investment of all because pure water is the base for all other resource development.

And time is fleeting! The year 2000 A.D is only 42 years away and there will be 300 million Americans at that time instead of the present 175 million.

Fish derbies—good or bad?

Fish derbies are a popular activity for service groups and sportsmen's clubs. Properly handled they provide interesting activities for kids and can be made to serve good purposes. Unfortunately, they are easily abused; often commercialized and sometimes have done more harm than good. Latest to be disenchanted by fish derbies—as a result of misguidance through over zealous commercial promotion—is the Province of Ontario.

Ontario has stopped giving away hatchery trout for children's fish derbies. This action was taken because of a conclusion reached that such derbies are "almost valueless" in teaching conservation. Conservation clubs, chambers of commerce and the like now have to pay for fish where previously the Province supplied fish for conservation-minded public organizations in the belief that organized fish derbies would help teach children good conservation ethics. It was found, however, that some private organizations were obtaining fish through these conservation groups to hold derbies as publicity stunts.

Even more disconcerting was the fact turned up by the check that the children's chief interest lay in obtaining prizes. They lost sight of the values of fishing for sport.

Ed. note: New York, fortunately has had better luck with kids' fishing derbies; rate them generally constructive. But then, we never provided trout; stock salvaged panfish instead. Kids are just as happy to catch a "punkin seed" as a trout.

Our real wealth

Vacationing and tourism comprise the Nation's third major industry, a major part dependent upon outdoor recreation.

In one year (1955), 25 million Americans went hunting and fishing and in the process spent $3 billion dollars for their recreation. Millions of Americans enjoy the out-of-doors and its delights remain for future enjoyment. Unspoiled natural scenery, quiet forests, cool lakes and rippling streams all have their separate attractions. No resources are destroyed and yet these participation sports, many available to the whole family, generate business that adds billions each year to the national economy.

Economy in government is a commendable and necessary objective but it would seem to be false economy not to provide for the replenishment and sustained management that will provide products and pleasures for us to use and re-use for all time. Economy for economy's sake alone can result in wanton waste, misuse and abuse of precious resources, and no nation dares to squander its basis of greatness.

Gulls and Terns

(*Continued from page 27*)

that most sight records of it in our area are worthless. The color plate picture of this species (painted from specimen taken in N.Y.S.), unfortunately illustrates an immature bird. In this plumage the Arctic and Common terns, at least in flight, are indistinguishable. In adults, the all-red bill (Summer only) of the Arctic together with its rather grayish underparts and slightly longer tail may *sometimes* be seen, but some Common terns also lack black bill-tips. Arctic terns can best be identified when standing side-by-side with Common terns, since the former species has shorter legs. There is a single specimen from Cayuga Lake taken in 1916; all other records from the State are from Long Island, and even here only one specimen has actually been collected (1884).

ROSEATE TERN (*Sterna dougallii dougallii*). This is perhaps the most beautiful of our terns, with its pale rosy bloom (during the breeding season) on the white underparts. One of the chief characteristics of this species is the exceptional length of the "streamers," or outer tail-feathers. The best clue to the identification of this species, which closely resembles our other small terns, is its call-note; once heard, it is not likely to be mistaken for any other species. The Roseate Tern breeds in small numbers in scattered colonies along the south shore of Long Island and on adjacent islands, mostly at the eastern end. Elsewhere along the coast it is an uncommon migrant, least often observed in Spring. It is purely casual anywhere inland, although there are a few specimens and sight records, chiefly from the Niagara Frontier.

SOOTY TERN (*Sterna fuscata fuscata*). This is a widespread species of tropical seas around the world and is one of the most frequent victims of hurricanes. Some of these storm-borne waifs have been deposited as far inland as Oswego, Lake Champlain and Owasco Lake, but most have been found in the Long Island area. The color pattern of the Sooty Tern, black above and white below, will distinguish it immediately from any of our common species. The Black Skimmer is somewhat similarly colored, but has a long red bill.

LEAST TERN (*Sterna albifrons antillarum*). This tiny and beautiful species nests on sandy beaches along the south shore of Long Island west of Jamaica Bay. It has decreased in numbers in recent years because of development of beach areas as resorts. Along the north shore of the island, as well as elsewhere in the New York City region, the Least Tern is a rather uncommon transient. It is exceedingly rare anywhere else in the State; there is a single recent authentic record from Keuka Lake, following a hurricane.

ROYAL TERN (*Thalasseus maximus maximus*). Second only to the Caspian Tern in size, the Royal Tern was long known in New York only from a single specimen taken on Long Island in 1831. Since about 1950, however, this species has turned up in small numbers almost every Fall, usually but not always after tropical storms, along the eastern part of the south shore of Long Island. It nests north to southern Maryland. Although quite similar to the commoner Caspian Tern, the Royal may be distinguished by its orange-red rather than blood-red bill and by the large amount of white showing on the forehead at almost all times of the year. There are no inland records.

CASPIAN TERN (*Hydroprogne caspia*). The illustration unfortunately gives an inadequate idea of this most impressive of terns. It is very large for a tern, nearly the size of a Herring Gull, and has an exceptionally heavy, powerful bill. The Caspian Tern has bred as close to New York as Presque Isle, Erie, Pennsylvania, but has never been known to nest in our State. It is a somewhat uncommon but regular migrant over most of the State, rare in Spring on Long Island but about equally common in Fall and Spring elsewhere in the State.

BLACK TERN (*Chlidonias niger surinamensis*). One of the few species in this family which is much commoner in the interior of the State than along the coast. The Black Tern is a bird of the fresh-water marshes of western North America, but its breeding range extends along the Great Lakes into New York, where it breeds east to the Thousand Islands and the Finger Lakes. It is a common transient on lakes and marshes of central and western New York; progressively less common toward the east. It is quite uncommon along the upper Hudson. In the Long Island region it is a rare Spring and common Fall migrant. The black-bodied Spring adult is highly distinctive; Fall adults and immatures have an odd pied appearance. They may be recognized by their forceful, somewhat swooping wingbeat, unlike that of other terns.

The Skimmers

BLACK SKIMMER (*Rynchops nigra nigra*). Although quite tern-like in many ways, the Black Skimmer is placed in its own family, primarily because of its peculiar bill structure. Almost knife-thin, the lower mandible of the bill extends well beyond the tip of the upper, a condition almost unique among birds. When feeding, the tip of the lower mandible is trailed in the water as the bird beats a path back and forth along the shore. The Skimmer nests in several large colonies on the south shore of Long Island. Like the Least Tern, it prefers bare sand, with little or no vegetation, so is quick to take advantage of newly-filled-in areas. Away from its nesting areas, the Skimmer is uncommon even on Long Island; there are a very few inland records of birds, presumably blown in by storms.

Note: The author wishes to acknowledge the kindness of John Bull, who provided him with the most up-to-date, authoritative information on the status of the breeding species and rarities of the New York City region.

Conservation and correction

The Youth Correction Camp at Pharsalia has been doing an outstanding job of rehabilitating young men from 16 to 21 years old and at the same time accomplishing exemplary work in resource management on Conservation Department lands.

A recent show place of what can be done by these boys, under the direction of Correction and Conservation departments' personnel, is the building of a marsh pond in the Town of McDonough. The normal flooded area of this pond contains 42 acres with a maximum depth of 12 feet.

The pond is 2,700 feet long and 1,200 feet wide, impounding over 19 million gallons of water.

The area is to be managed for fish and wildlife and will, of course, serve as a catchment to slow the run-off of surface waters. A readily available and adequate supply of water for forest fire fighting will add to the multiple values of this big pond.

Grasshopper hawk

Most ornithologists agree that the most misnamed bird on the list is the diminutive "sparrow hawk"—one of the most beautiful of the falcons and certainly no sparrow fancier. Actually, the little falcon's main diet, established by stomach examinations, is very largely grasshoppers and other insects.

The Small Wood Lot

(*Continued from page* 33)

farm use. Nine and a half million of those acres have passed out of farm use. About a third or 3,000,000 of those acres were in woodlot use at the time of abandonment, so that some 6,500,000 acres of crop and pasture land have passed out of farm use. It is estimated that about 2,500,000 acres are still open or in brush reverting to forest land, leaving 4,000,000 acres, most of which have already reverted to forest use. Only about 600,000 acres of this reversion to forest use has been planned for by positive action; i.e.; artificial reforestation. The balance, probably close to 3,000,000 acres, has just grown up to forest in the absence of any other form of positive land use. In this sense, forest land use has increased tremendously in New York, and in the absence of any other positive uses, naturally appears to be the best use of these acres for the time being.

"Our problems appear to be lack of knowledge, lack of capital, apparently disinterested landowners and inefficient ownership units for productive forest management. Solving the first (i.e., lack of knowledge) may relieve the burden that other factors place on improving the productivity of lands whose best use naturally seems to be forest production."

There you have it! The problems facing us are indeed very involved and appear to be almost insoluble. The comments which have been made are often contradictory but it is felt that when the vast amount of information which was gathered throughout the Nation is fully catalogued, studied and carefully analyzed, certain very definite patterns for sound solutions to the small wood lot problem will appear. When this occurs, the foresters and others keenly interested in this problem, will come up with a nationwide plan for improving our timber resource which will be practical, feasible and workable. It will be a foundation on which all of us can build for the future. Its success will depend upon the degree to which it is supported by our economists, foresters, research technicians, industry, others, and most important of all, by you—the general public.

Wrong turn

A news item from Tokyo, Japan, reports that forestry officials there found a duck, shot down near Niigata in central Japan, wearing a U.S. Fish and Wildlife Service leg band. The officials said they had no previous records of ducks crossing the Pacific, although there are records pigeons banded in Japan turning up here in the United States.

Bringing the message home

Canada's Hampshire County Council has a new anti-litter idea. Car numbers of picnickers who mess up the New Forest are noted and the addresses of the owners traced. Then the Council sends them a "mystery parcel" COD, for which they're only too glad to pay until they open it and find their empty cigarette packets, wrapping papers, etc. Says the Council: "We feel it's an effective way to bring the litter problem home to the public."—WALLACE REYBURN, *The Toronto Telegram*

Rainbows of Lebanon

Catherine Creek is noted for its big rainbows and fishermen travel long distances to the Finger Lake tributary for a try at the big ones. But Harold Rollins of Earlville is one fisherman who has found the answer closer to home.

The picture shows Earl with two of his rainbows taken from Lebanon Reservoir in Madison County. The larger fish is a male 26½ inches long and weighing 7 lbs., 8 oz. The other, a female of 24 inches, weighed in at 6 lbs., 10 oz.

The history of rainbows at Lebanon is an interesting one. Originally built to serve as a feeder for the Barge Canal, Lebanon Reservoir is a man-made body of water of about 100 acres with a maximum depth of 46 feet. In 1952, the water was drawn down to permit repairs to a gate valve in the drain pipe located in the base of the dam and a fish salvage operation was carried out when it was seen that mortality was imminent. Bass and pikeperch were the chief game species present at that time. While the reservoir was at low ebb, a decision was made to reclaim the reservoir by fish eradication with rotenone and then stock and manage it for trout.

Brook trout stocked as fingerlings in the Fall of 1952 made excellent growth and by mid-1953 were fine deep-bodied fish. In spite of the excellent fishing available, only a relatively few fishermen took advantage of it. Unfortunately most anglers did not realize the capabilities of such a small lake in producing trout when conditions are right and felt that the trout would not be worth catching.

Brook trout were again stocked in 1953 but already the presence of intruding warm-water fish was noted. The small tributary streams and ponds that could not be treated with rotenone were already at work innoculating the reservoir with sunfish, chub suckers, bullheads and other non-trout species. A few rainbow trout had been mixed with the brook trout and a netting check in 1954 indicated that they had made even better growth than the brook trout. So a change toward management for rainbow trout seemed to be indicated.

All trout stocked through 1955 were marked by the removal of a fin in order to determine the success and effectiveness of each planting in producing fishing. In 1954, stocking emphasis was placed on rainbows. A sample of the end result is Harold Rollins' catch pictured here. It is interesting to note that when these trout were planted in October, 1954 they averaged 2.2 inches in length. Several reports of even larger rainbows have been received and in view of the above evidence it is felt that they may be based on more truth than fiction.—A. C. PETTY, *District Fisheries Manager.*

Conservation in school

A unique test of the conservation understanding of more than 15,000 youngsters in public school, grades 6 to 12, was conducted in schools of Virginia and a report is now available to interested persons.

The report discloses that the average statewide score for all pupils was 54.8 of a possible 100. Both the level of attainment that appeared possible, and the total amount of knowledge deemed necessary for satisfactory citizenship, indicate that the knowledge possessed is below a desirable level. Although average scores were progressively higher in each grade, the attainment was inadequate and the rate of acquisition of knowledge declines after the ninth grade.

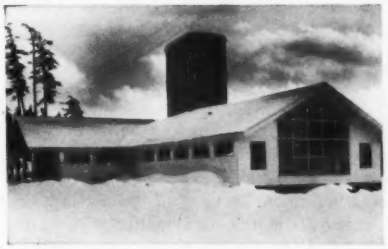
The greatest knowledge was shown in principles of general conservation, the least—in wildlife conservation. Average total scores from the northern part of the state were higher than those from the south and central areas and insignificant differences were found between geographic regions and between sexes. Farm children were found to be significantly lower in conservation knowledge than either urban or suburban pupils. Write Va. Co-op. Wildlife Res. Unit, Va. Poly. Inst., Blackburgh, Va. for the report.

Rain

Rainfall in New York in a year exceeds 3,000 tons on each acre. This is three times the weight of soil in the plow layer. Water in terms of weight alone is an even greater asset than soil.

Smart grouse

Where do grouse go when it's cold and windy? A group of experienced grouse hunters were surprised to find, on such a day last season, their quarry's tracks disappearing into a woodchuck burrow. The bird, in question, seemed to be in good health.



Library at Paul Smith's

Mention a place in an article (see "Co-operative Conservation," Dec.-Jan., 1958-59 issue) and invariably we can turn up some other little item on it. For instance:

A beautiful new library has been opened for student use at Paul Smith's College as the latest addition to the educational facilities of this rapidly-growing private junior college in New York State.

Although the new library was not officially dedicated until this Spring, the demands of a record enrollment of more than 400 students prompted the college officials to make the new unit available during this past Fall and Winter.

A year and a half in the building, the new library stands on the shore of Lower St. Regis Lake, features six large picture windows along the shore side of the reading room, providing an extensive view of the lakes and mountains which border the college property and which mark the campus as an uniquely beautiful spot.

Another feature of the L-shaped building is the tall, stone structure rising from the junction of the wings. The 60-foot high, square shaft was once part of the famed Paul Smith's Hotel casino and has been a landmark for years. It will eventually be incorporated into the new building to house bookstacks.—ROLAND B. MILLER

New York Ponds Stocked By Airplane, 1958

Asterisk (*) indicates reclaimed pond

Clinton County (4)
Military Pond
Mud Pond (2)
Slush Pond

Essex County
Barnes Pond
*Bass Lake
*Big Cherrypatch Pond
Black Pond (2)
Clear Pond (2)
*Cold Spring Pond
Copperas Pond
Dunk Pond
Flowed Lands
Goose Pond
*Grizzle Ocean
*Hatch Pond
Latham Pond
Livingstone Pond
*Little Rock Pond
*Long Pond
*Lost Pond
Marion Pond
McKenzie Pond
Moose Pond
*Moose Mt. Pond
*Owen Pond
*Oxshoe Pond
Pharaoh Lake
*Rock Pond
Sherman Pond
Stony Pond
Upper Twin Pond
Upper Wallface Pond
Vanderwacker Pond
Winch Pond
Whortleberry Pond

Franklin County
Bessie Pond
Big Fish Pond
Catamount Pond
*Clamshell Pond
Dawson Pond
Deer Pond
*Grass Ponds (2)
Meadow Pond
Green Pond
Gull Pond
*Horseshoe Pond
Ingraham Pond
Kit Fox Pond
Ledge Pond
*Little Ampersand Pond
*Little Fish Pond
Little Long Ponds (2)
*Little Polliwog Pond
*Lydia Pond
*Monday Pond
*Mountain Pond
*Mud Pond
Nellie Pond
*Ochre Pond
*Otter Pond
Owl Pond
Palmer Pond
Big Pine Pond
River Pond
*Rock Pond
*St. Regis Pond
Sky Pond
So. Otter Pond
Square Pond
Sunrise Pond
*Tuesday Pond

Fulton County (10)
*Fourth Lake
*Holmes Lake
Indian Lake
*Long Lake
Long Lake
Long Pond
*Nine Corner Lake
Red Louse Lake
Stewart Pond
*Third Lake

Hamilton County
Ale Pond
Amos Lake
Barker Pond
Bear Lake
Bear Pond
*Bennett Lake
Big Alderbed
Big Rock Lake
Bochen Lake
Brook Trout Lake
Brown's Pond
Brown Lake
Buckhorn Ponds
*Bug Lake
*Bullhead Pond
Canary Pond
Carry Pond
Cascade Pond
Castor Pond
Cat Lake
Cedar Lake
*Center Pond
Christian Lake
Chub Pond
*Clear Pond
*Constable Pond
Cooney Lake
County Line Lake
Cranberry Pond
Deep Lake
Dewitt Pond
Duck Lake
*Eagle Nest Pond
Grant Lake
Grass Pond
Green Pond
Headwater Pond
High Pond
Indian Lake
Indian R. Stillwater (2)
Iron Lake
Jessup Lake
*Jockeybush Lake
John Mack Pond
Johns Pond
Lake Chartreuse
Little Loomis Pond
Little Moose Pond
Little Pine Lake
Little Rock Lake
Little Sisters Lake
Long Lake
Long Pond
Lower Mitchell Pond
*Lower Sargent Pond
Lower Twin Lake
*Mays Pond
Metcalf Lake
*Middle Lake
Middle Little Chain Pd.
*Middle Sargent Pond
Misery Pond
Morley Lake
Mud Lake
*Murphy Lake
North Branch Flow
Northrup Lake
Notch Pond
Otter Lake
Owl Pond (2)
Owlshead Pond
Pea Pond
Pelcher Pond
Pigeon Lake
Pillsbury Lake
Pine Lake
Pine Pond
Pine Mt. Pond
Queer Lake
Rock Lake
Rock Pond
Ross Pond
Round Pond
Sampson Lake
Scutts Lake
Second Chain Pond
Silver Lake
Slim Pond
Sly Pond
Snag Lake
South Lake (of W. Canada)
South Twin Lakes
Spoon Lake
Spruce Lake
Squaw Lake
Squirrel Pond
Stephens Pond
T Lake
Third Anthony Pond
Tirrell Pond
Twin Rock Lake
Unknown Pond
Upper Gull Lake
Upper Little Chain Lake
Upper Loomis Pond
Upper Mitchell Pond
Upper Sisters Lake
Upper Twin Lake
W. Canada Cr. Stillwater
West Canada Lake
White Lake
White Birch Lake
Whitney Lake
Wilson Pond

Herkimer County
Bear Lake
Big Five Pond
Big Otter Lake
Black Cr. Lake
Boyer Lake
Buck Pond
Cage Lake
Clear Lake
Cranberry Pond
Crooked Lake
Deer Pond
East Pond
East Higby Pond
Gregg Lake
Hawk Pond
Hitchcock Lake
Hog Pond
Horseshoe Pond
Jake's Pond
Little Crooked Lake
Little Rock Pond
Little Salmon Lake
Lower Mosher Pond
Middle Branch Lake
Middle Settlement Lake
Mountain Pond
Nick's Pond
Razorback Pond
Rock Lake
Salmon Lake
Sand Lake
Summit Pond
Sunshine Pond
Tied Lake
Twin Lakes R.
Upper Mosher Pond
Walker Pond
West Higby Pond
Witchhopple Lake
Wolf Pond
Wood Pond

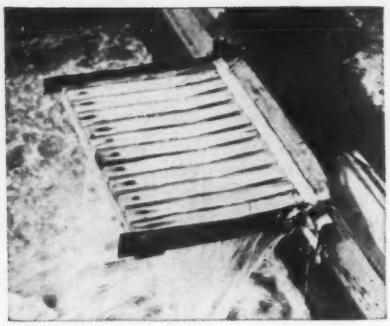
Lewis County
East Pine Pond
Mud Hole Pond
Pine Lake

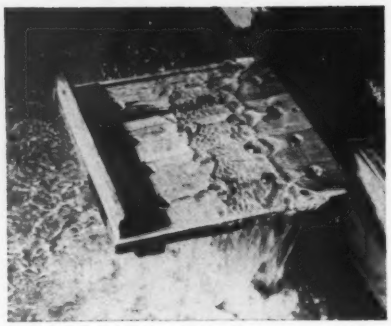
St. Lawrence County
Bassout Pond
Bear Lake
Big Trout Pond
Bridge Brook Pond
Buck Pond
Burntbridge Pond
Cat Mt. Pond
Cowhorn Pond
Curtis Pond
Darning Needle Pond
Dog Pond
Dry Timber Lake
Fishpole Pond
Glasby Pond
Greenwood Lake
Hedgehog (Clear) Pond
Little Trout Pond
Long Lake
Olmstead Pond
Otter Pond
Rock Lake
Round Lake
Simmons Pond
Spectacle Ponds

Warren County
Alligator Pond
Clear Pond
Buttermilk Pond
Crane Mt. Pond
Duck Pond
Hour Pond
Island Pond
Jabe Pond
Kibby Pond
Little Pond
Long Pond
Lower Twin Pond
Lower Siamese Lake
Mud Ponds
New Lake
Peaked Mt. Pond
Pole Hill Pond
Puffer Pond
Round Pond
Second Pond
Shiras Pond
Spectacle Ponds
Upper Siamese Lake
Upper Twin Pond
Wilcox Lake

Washington County
*Fishbrook Pond
Lapland Pond

Ed. note: See "New York's Flying Trout," this issue.





Air for trout

Visitors to trout hatcheries are usually amazed at the number of fish kept in a single small pond. Actually the densities of trout in hatchery ponds are often as much as 250 to 500 times as great as in natural waters in the wild. These greater densities are possible because the fish are fed amounts far in excess of the food that would be available in the wild.

But such crowding is not without problems; one being the necessity to supply all the fish with sufficient oxygen. Hatchery men accomplish this by constructing aeration devices into the pond system. Ponds are usually built in series of five or more and the common aerating devices are the dams at the end of each pond where the water falls from the level of one pond to the next.

Whenever water falls over a dam into water below it carries with it bubbles of air and while these bubbles are in the water part of the oxygen in them dissolves. The greater the height of fall the more bubbles are carried into the water and better aeration results. The slope of land at a possible hatchery site is therefore one of the important factors considered in the design of a hatchery.

Sometimes, when hatchery springs are found at locations where the land is quite flat, it is impossible to build into the pond system as much fall as is desired, and then whenever the loads of fish are heavy and the temperatures are high, attention must be given to regulate feeding schedules and water flows so that suffocation of the fish will not occur.

Recently a study has been conducted to learn how much improvement could be made in the aeration of water as it flows over a dam. Our conclusion is that any modification of a simple straight dam-board is an improvement. One of the most effective devices is a flat rack projecting from the spillway (*see photo at left*). Another effective device was a flat sheet of plywood through which one-inch holes are bored; the holes spaced several inches apart (*photo at right*).

These devices increased the oxygen about two and one-half times as much as a simple dam.—D. C. Haskell and R. Davies.

Rabbit bottles

Those who are periodically harassed by cottontails browsing on their choice shrubbery and garden plants, may want to try this one. Split-size bottles of an inconspicuous green color are set up, three to five feet apart and buried just enough to hold them upright. It seems that the breezes blowing across the open mouths create noises that annoy the rabbits and send them scurring to other banquet grounds, according to some users, presumably those who live on windy hills.

Christmas trees

Pruning and shaping doubles the number of saleable trees in a plantation of Christmas trees. Prune the pines in early Summer when growing fast; spruces anytime.

Bag limit

A sportsman is not one obsessed with killing as much game as possible. A full bag limit is unimportant when measured against such things as fellowship, relaxation and the many other joys of the outdoors.

Sewage disposal

Sewage being one of our most important pollution problems, progress in methods of treatment to make it safe is welcome news.

Treatment by burning is a new technique and seems to have promising possibilities. A pilot plant is already operating successfully on the principle of pumping the sludge into a reactor where it is subjected to pressure and heat. Although the sludge contains as much as 88 per cent water, the solid materials ignite and burn, leaving a fine ash and water. This ash and water mixture is then considered safe to be put in streams.

Cost estimates of the combustion process are $12 per ton, considerably less than one of the more common processes which first extracts the water, then dries the residue for use as fertilizer but costs $35 to $40 per ton.

Old 993

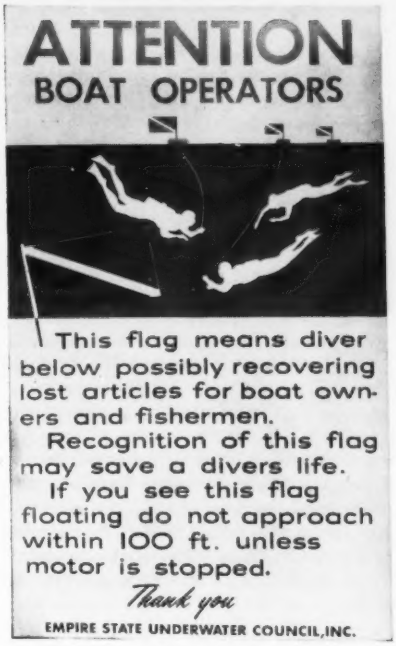
Central Fisheries District personnel have lost an old friend affectionaately nicknamed "Old 993." The deceased was a lake trout first encountered during an experimental netting operation in 1952 at Otsego Lake. At that time the fish was captured in a gill net, weighed 14 pounds and measured 33 inches. Tagged with jaw tag No. 993, it was put back in.

The co-operative fish was encountered again in 1956 during another netting study at which time it was 33½ inches in length and still weighed 14 lbs. On June 12, 1958, Clement Webster of Cooperstown, trolling in 60 feet of water with a leatherstocking spoon succeeded in capturing "Old 993." He sent the jaw tag to Norwich headquarters along with the information that the fish at time of capture was 32½ inches long and in good condition, but weighed only 10¾ lbs.

License stubs

Ever wonder what happens to the fish and game license stubs—the ones a County Clerk keeps when he sells you a license?

The picture shows a few of these sent in to the Albany office of the Conservation Department by license issuing agents. After the stubs are received in Albany, they are audited to check with the cash remitted. After the audit they are turned over to the Bureau of Game where a random sample of the licenses is taken from all hunting or combination hunting and fishing license stubs. Then questionnaires are mailed to all licensees in this cross-section sample asking them to report the kinds and amount of small game they took during the season. From the replies to this questionnaire, statistical calculations give the results of the small game harvest to within 10 per cent of the actual take.


ATTENTION
BOAT OPERATORS
This flag means diver below possibly recovering lost articles for boat owners and fishermen.
Recognition of this flag may save a divers life.
If you see this flag floating do not approach within 100 ft. unless motor is stopped.
Thank you
EMPIRE STATE UNDERWATER COUNCIL, INC.

Safety flags

The Empire State Underwater Council and skin and S.C.U.B.A. divers across the country are constantly faced with the danger of being run down by motorboats. Already several divers have been severely injured by motorboat propellers. For some time now, the more cautions divers have marked their areas of activity with flags but there was no standard banner that the boat operators could watch for and understand. Now the divers across the country, faced with this common problem, have adopted an official diver's flag. It is red with a diagonal white stripe and indicates that there is a diver in the immediate area.

While a diver can hear the boat's motor for quite a distance under water, he cannot dive fast enough, in most cases, to avoid the whirling blades if he is near the surface and in the path of the speeding boat.

So if you are boating and see flags, like the one pictured, please stay a safe distance away. With the rapidly increasing numbers of divers there is an excellent chance that you will be seeing them this season.

Logging and deer management

After years of study, game biologists are firmly convinced that productive deer herd management must be based on the supply of food (browse) available on areas where the herd must winter. In other words, the deer herd and its food supply must be in near-balance. In the more northern regions these areas are more closely delineated because the animals move into "yarding" or concentration areas for shelter. In areas of less rigorous climate the animals may range freely but must still be supported by browse available during the non-growing season.

Larger deer herds can be maintained on unit areas if sufficient browse can be maintained by management. This usually requires costly methods of cutting or planting.

A recent study, "Deer Browse Production from Felled Trees in the Northern Hardwood-Hemlock Forest Type," reported in the *Journal of Forestry* (June, '58) presents some excellent facts of how important commercial logging operations can be, at no cost to game management, in providing supplemental food immediately available for deer.

The study, conducted by J. H. Stoeckeler, J. M. Keener and R. O. Strothman, in northeastern Wisconsin, presents some interesting findings. (It should be remembered that it requires approximately six pounds of good quality deer browse daily to keep a white-tail deer in good physical condition.) A sample of northern hardwoods such as sugar maple, red maple, yellow birch, basswood and white ash in pole and sawlog size stands can produce an average of 13 pounds of fresh browse and for hemlock 117 pounds per square foot of basal area (cross-sectional area in square feet at breast height). A moderately dense stand of second-growth hardwood hemlock often contains 90 square feet of basal area of hardwoods and 10 feet of hemlock. If clear cut this stand could produce 2,340 pounds per acre.

Browse production per thousand board feet of gross volume of sawlogs cut amounted to 121 pounds of hardwood browse and 1,507 pounds of hemlock browse. Browse production for a standard 4x4x8-foot cord in the 5- to 9-inch diameter class provided 80 and 929 pounds for hardwod and hemlock browse, respectively.

In a typical cutting on a national forest (Nicolet) only 20 per cent of the total basal area is cut, on a selective basis, and produces 1,400 board feet per acre and a calculated 360 pounds of browse. In a sample year, 2,925 acres of this forest was logged producing an estimated 526 tons of browse which was equal to one-half the nutrient requirement of 5,850 deer for an 80-day Winter period.

A young hardwood stand of 1 to 5 inches when thinned by removing 418 hardwoods or aspen produced 372 pounds of fresh browse per acre.

Sustained yield forestry with annual timber cutting on large forest properties can be an important factor in the over-winter survival of a deer herd by providing supplemental feed from newly-felled tops and later in the sprouts and new seedlings stimulated by logging.

Balmy bees

Every once in a while, honey bees make a mistake in their choice of home sites. This 11" x 17" four-comb beehive illustrates one such error. It was found by Ernest Rivenburg in his New Salem apple orchard. Why the honey bee builds out in the open at times has never been explained satisfactorily.

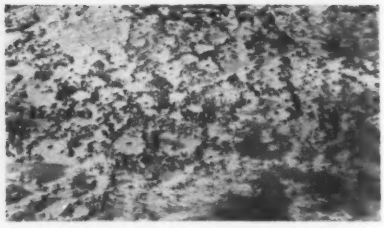
Beekeepers merely can speculate and the best of these speculations are: (1) That sometimes bees are carried away by their impatience and zeal during swarming time and build on the first solid thing that they contact; (2) that being unable to find a hollow tree, a cavern or a protected spot (their normal hiving places) in a reasonable space of time, their instinct for survival causes them to build in the open; (3) that sometimes a home is destroyed late in the season and in their frenzy to produce enough honey to carry them through the crucial Winter months, bees build in the open.

All mistakes must be paid for in some way and for the honey bees, in such cases, the price is high—the colony freezes to death. (For more information on the honey bee, see "All About Honey Bees," THE CONSERVATIONIST, June-July, 1958.)

Whee!

The otter's favorite pastime is sliding. During the warm months a mother and her young will spend hours every day sliding down steep creek banks.

Muskrats from the air



Counting muskrat houses across the State could be an impossible chore if it had to be done on the ground. But the Department's reconnaisance airplane and crew can accomplish such a survey in a matter of a few days, when weather conditions are right.

This year the survey was completed in early February and yielded important information for Game Managers whose job it is to adjust the trapping season to harvest the available surplus, yet not cut into the breeding stock for the coming year. The active muskrat house count this year in the Northern Trapping Zone showed a very substantial increase (more than 125 per cent) over a similar period in 1958, with the largest numbers in the Lake Champlain area. 'Rat populations were down in the marshes along Lake Ontario and the St. Lawrence River, primarily a consequence of low lake levels. The Southern Zone revealed a lesser increase (15.4 per cent) but still a substantial population for harvest.

In general, the muskrat surveys have shown an under-harvest over a period of several years, and, due to the early freeze-up this year, even the earlier season did not provide for good trapping success. In areas such as the Lake Champlain region, the exceptional population buildup requires more adequate harvesting to prevent the likelihood of an "eat out" or "die off" which could set the normal population back by several years.

The aerial survey is handled by a two man crew—pilot and observer—using a Cessna 180, equipped with amphibious gear. The observer has a set of U.S.G.S. maps covering every important muskrat producing area in the State. The flights are timed very carefully to coincide with weather conditions; the ideal time being just after a light snowfall with temperatures at or near the freezing mark. At such a time, occupied muskrat houses in the marshes show up as obvious black spots (*see photo*) because the heat generated by the animals in a house melts off the cap of snow. Unoccupied houses show up as just mounds of snow.

The number of occupied houses in a marsh is counted by making flight transects, at low level, until the whole marsh is covered. The count is recorded for each major marsh and is compared with the surveys of the same marsh in previous years.

A new and helpful innovation this year was the use of a battery operated tape recorder which allowed the observer to make his record by voice instead of having to jostle with pencil and record sheets. The latter system can be difficult especially when the pilot is maneuvering the 'plane at low level and competing with air currents that give the effect of a rough roller coaster ride.

Done to a "tern"

Maybe birds and animals can't talk, but they've certainly added lots of color to the English language. Did you ever stop to think of all the different phrases they've inspired?

For instance, you may wake up in the morning feeling cross as a bear—or happy as a lark. If you can't get moving because you're still half asleep, you're slow as a turtle. Then, you may go downstairs feeling strong as an ox only to find there isn't time for breakfast, so you eat like a sparrow.

You rush to the office looking bright-eyed and bushy-tailed, and expecting to be busy as a beaver all day long. But the boss is mad as a hornet, and suddenly sends you off on some wild goose chase because of a hare-brained idea he has. You feel like telling him off, but if you do, you'll be a dead duck, so you're quiet as a mouse.

By now, you're nervous as a chipmunk. Even your secretary is in a bad mood. Ordinarily, she's gentle as a lamb, but today, she's like a hen on a hot griddle. Not only that, but she forgot her glasses and she's blind as a bat without them, so she keeps walking into things, like a bull in a china shop.

By noontime, you feel like getting drunk as a skunk. But the boss has eyes like a hawk and is sure to see you. Then your goose would really be cooked. So you stay on the job and try to tell yourself you're having more fun than a barrel of monkeys.

Doesn't work, though, and you go home with your tail between your legs, wondering why you're such a bear for punishment. You tell your wife you must be crazy as a loon to go on working there. Then you find she's made your favorite pie for dessert. You've been nuts about apple pie since you were knee-high to a grasshopper. So, at the end of the day, you go to bed happy as a clam and what happens next day? Same old rat race all over again!—ROSEMARY E. CLARKE, *Radio Bureau, Dept. of Commerce.*

Roman holiday

Hatchery personnel at the Conservation Department's Rome fish hatchery will not soon forget last New Year's Eve. They had a "party," but not the kind normally associated with this end-of-year celebration.

To start festivities off, the hatchery's big 10-inch electric water pump overheated, burned out and, in the process, set fire to the pump house. This meant that half a million trout in the hatchery ponds would be on short oxygen rations until normal water flow resumed. The pumping job, itself, was a stop-gap operation pending completion of repairs to the upstream dam at Delta Reservoir, the normal source of water supply for the hatchery.

With the fire out, courtesy of the Delta Fire Department, an auxiliary gasoline driven pump was hooked up—and promptly quit! So an emergency call went out for a new motor. When this arrived, the men found new fittings had to be machined to hook it up—another emergency job, finally accomplished. Meanwhile Jack Frost was getting his licks in on the water pipes connecting the ponds. By the time the pump was in operation (11:30 New Year's Eve) the pipes were blocked with ice. So all hands turned to the thawing out job—winning that battle at 1:30 a.m. New Year's Day. The men, "bushed" by this 'round-the-clock fight with fire, machines and ice, voiced a few well-chosen New Year's resolutions; the hatchery trout, busy gulping the fresh, water-borne oxygen, heaved whatever passes with trout for sighs of relief—and another New Year's Eve went into the record book at the Rome Fish Hatchery.

Fish guides

In some of our water, both fresh and salt, will be found an assortment of markers—sticks, poles, floating cans and the like, placed by fishermen so they can again find a preferred fishing spot.

The Texas Game and Fish Commission has refined this practice and set out floating fiber glass buoys as permanent markers on the better fishing reefs and shoals of costal bay waters.

Birch leaf miner

In the August-September, 1956 issue of THE CONSERVATIONIST, in response to many inquiries as to why the leaves of white and gray birch trees were turning brown, an article appeared describing the birch leaf miner—the insect responsible for the damage. That article, although it answered several questions and outlined recommended control methods, appeared too late in the year to permit control that season.

This time we are ready and if you want to prevent the birch leaf miner from attacking the leaves of your ornamental birch trees, try the following suggested receipe: Just about the time the leaves are expanded and the small blisters or mines are beginning to be noticeable, spray with a mixture of one pound of 25 per cent wettable Lindane powder to 100 gallons of water. For smaller quantities, use equivalent proportions. Repeat the spray in early July for the second generation. As part of the life cycle of the miner is spent in the soil under infested trees, Lindane sprayed on the surface of the ground under infested ornamental trees in late June and early July will aid your control problem.

Some people may have difficulty in recognizing early symptoms so here's a good rule of thumb: If you have only a few birch trees and have had trouble with their leaves prematurely turning brown and falling off in previous years, spray them with the recommended mixture as soon as the leaves have expanded—just on general principles. Otherwise you may recognize the symptoms too late for control.

For additional information concerning the life cycle of the birch leaf miner and the damage it does, write the Bureau of Forest Pest Control, N.Y.S. Conservation Dept., State Campus, Albany or the Tree Pest Information Service, College of Forestry, Syracuse.—ROY IRVING

Tree farm tours

An excellent leaflet entitled, "New York Tree Farm and Mill Tours," is available from the New York Forest Industries Committee, Box 218, Deferiet, N.Y., explaining how teachers and educators can plan class trips to Tree Farms and wood products processing mills in their vicinities.

The leaflet gives a listing, by counties, of over 65 places that will conduct tours, explaining their operations for management and use of this most important renewable resource—our forests.

Insecticide research

For years intensive research has produced new and better insecticides to help man in his battle to control noxious insects. Many good ones have been developed but side effects have often been undesirable. The recent extensive fire ant control program caused much concern when it was found that it may have caused more economic loss to recreational resources than it was designed to prevent for agriculture.

There seems to be new hope for biological controls and several companies are already working on microbial insecticides which utilize certain bacillus spores to control some insects without harm to the bees, winged insects, animals and fish. Another development is the use of inert sorptive dusts which are fine white powders (treated silica aerogel) which absorb the insects' waxy body coating. Without such protective coating to retain body fluids, insects simply dry up and die.

The fire ant

Fortunately, New York has not been afflicted with a visitation by the fire ant, an accidental import from South America. Even more fortunately, we have not been confronted with demands for its control by use of pesticides that have caused so much controversy in the Southern States with respect to wildlife and livestock damage.

The fire ant caused considerable alarm because of the painful stings it inflicts. Secondly, the habits of the insect involving the building of huge nests or ant hills caused some problems in the operation of farm equipment. Moreover, it was thought to be a destroyer of wildlife and domestic livestock crops and an all out poisoning campaign was instituted in several of the Southern States with large areas being treated with pesticides in an attempt to eradicate the pest.

The major controversy arose when field checks revealed that poison damage to other beneficial insects, wildlife and livestock seemed to be considerably greater than the damage caused by the fire ant, even when uncontrolled.

Now it seems that every one concerned is convinced that a more thorough study of the insect and its impact on agriculture should be made before wholesale control measures are instituted or continued.

In this day and age the use of pesticides is a must in growing crops for human or animal consumption but most everyone feels that the use of poisons to control insects and disease must be used with extreme care and careful planning lest they cause more damage than that which they are expected to eliminate.

Fishery publications

A limited number of the Department's Fisheries Biological Surveys are still available. These publications contain detailed reports of biological studies of watersheds and include lake maps, stream location maps and fish stocking recommendations for the various watersheds of New York State. They contain much valuable general information and each has several full color plates of fish.

Survey reports available and their prices are: Oswego River System, $2.60; Erie-Niagara System, $2.25; Champlain Watershed, $2.90; St. Lawrence Watershed, $2.40; Raquette Watershed, $2.65; Lake Ontario Watershed, $2.50; Upper Hudson Watershed, $2.80.

When ordering, please make check or money order payable to New York State Conservation Department and address your request to the Division of Conservation Education, New York State Conservation Department, State Campus, Albany.

Special note to conservation departments, fishery students, and others interested in fish propagation: Also available from the same address, but free of charge, are Fisheries Research Bulletins Nos. 1 through 19 (except #2). All of these bulletins are concerned with the nutrition of trout based on work at the Cortland Hatchery and sometimes are referred to as Cortland Hatchery Reports. In addition, two other fishery publications are available upon request: "Prevention and Control of Hatchery Diseases by Treating the Water Supply" and Fish and Wildlife Bulletin No. 2, "Four Years of Landlocked Salmon Study."

Letters to the Editor

Chum line

Dear Sir: Your articles in THE CONSERVATIONIST about fishing convince me that you have done ever so much reading and research, so perhaps you would be kind enough to help me with some information. This question is difficult to be dogmatic about, I know, but I appreciate any ideas or opinions you may have found.

The question: Why does a blue fish (for instance) swim up a chum line? Is it the pieces of ground up menhaden, the flashing scales or is it possibly the smell or taste of the rather potent oil that forms a slick or trail? I am interested in a lure patented by a friend. It exudes oil or essence when the lure is filled and either trolled or gigged. I wonder what possible advantage the oil may add to the efficacy of the lure.

Arnold V. Jensen, Staten Island

• *Without being facetious, the answer to "Why does a blue fish swim up a chum?" probably is because he's hungry—enough so to find the source of whatever smells so good.*

When the herring-like menhaden or mossbunker (bunker for short) is ground for chum, it becomes a mixture of flesh, skin, bones, scales, and last, but not least, a real "high" oil. Ground 'bunker is used for chumming several species of salt-water fish, but is best known for and most frequently used for attracting the very sporty blue fish. The oiliness of the 'bunker chum creates a slick in which are suspended smaller particles of flesh and scales and these drift back and down from the chummer with the current. The oil, however, is more buoyant and reaches even farther back so that if fish are any distance off, it is the odor and taste of this oil which starts the "blues" up the chum line.

Experiments with many species of fish have shown that they have excellent senses of smell and taste. In some fish, taste buds are found not only in the mouth, but on the outer surface of the skin as well. Therefore, they don't even have to open their mouths to taste. It is not thoroughly known what combinations of cues may be necessary to initiate the feeding reaction in fishes. In the case of the blue fish, however, it undoubtedly uses its eyes to advantage once it comes in range of the fish scraps wafted about in the current.

Minced clams and crushed mussels suspended at the end of a weighted line in fine mesh bags are frequently employed to attract "ground" fish or bottom feeding species. Another scheme successfully used is to tie a can of sardines on the line in place of a lead sinker. When the can is punctured with a few holes, the oil from the sardine pack will create a private chum streak. This trick is sometimes used by fluke fishermen when drifting to attract the flatfish to their particular baits. Another simple way to create a good "slick" is to dump a can of cheap (?) salmon into a large can of seawater and make a thin, oily mixture which can be ladled overboard. This trick is used by mackerel seiners to concentrate fish before setting a net.—Irwin Alperin, Aquatic Biologist

Otter?

Dear Sir: Several days ago, while I was down at the bridge by the creek, I noticed some strange animal tracks that went under the bridge and out the upstream side.

There was perhaps ¾ of an inch of fresh snow on top of the ice so they made a good imprint. I went down the bank and examined the tracks closely. To my knowledge, I had never seen ones like these before.

The tracks were about 14 or 15 inches apart (that is the length of the step); either the front or back foot was a trifle smaller than the other and it did not step exactly in the other track. There was considerable fur or hair in front of the toes and no toe nails showing; five toes and the foot was about 1½ inches wide; pads were unusual in shape. On opposite page is a drawing of it.

The middle toe is about ¾ inch farther front than the outside ones. The fur is ¾ or ½ inch larger than the foot. The point on the pad is on the outside.

Ross Phipps, Verona

• *Considering the location of the tracks, the five toes showing, and the unusual shape of the pad, I would guess that it was an otter. The thing that is confusing is the amount of hair that shows in front of the toes, but then maybe the otter scuffed or dragged his feet a little as he walked. A bobcat often shows this amount of hair, but usually only four toes and a more regular pad shape.—H. Wayne Trimm*

Deer vs. spruce

Dear Sir: I received 1,000 white spruce from the Conservation Department in the Spring of 1958 and successfully planted same. Last Fall upon inspection most of the trees had gained about 3 to 4 inches new growth which I thought to be very encouraging. I ordered 1,000 Norway spruce for the year 1959 and sent you my check dated February 7th for the amount of $5. On February 15th, I went up to look at the trees and every one of the trees were destroyed and eaten by what I suspect to be deer browsing.

I see no sense now in planting the 1,000 Norway spruce (that I ordered) this year so am cancelling my order.

John Reed, Yonkers

• *I am very sorry to learn from your letter of the 18th that the deer have so extensively damaged your 1958 planting of white spruce. It is most discouraging to have such a thing happen. I had not realized that the deer problem was so acute in Putnam County. We know that deer populations are high throughout most of central New York and that damage to plantations has been of frequent occurrence.*

In winters of cold weather and deep snow, deer tend to congregate on south slopes and other similar areas where snow depth is least. When there are more deer than the wintering areas will support, the animals get to eating anything and everything green—even white spruce. The only tree that we know of that the deer will not browse is larch—they are very nearly deer-proof. If you would like to have 1,000 larch instead of Norway spruce, we would be glad to make the necessary adjustment.—David B. Cook, Supervising Forester

Lake George fishing

Dear Sir: I am a local fishing guide on Lake George and would like to comment on what Mr. Zilliox said about lake trout in Lake George when the ice went out

last Spring (Dec.-Jan. issue CONSERVATIONIST). He thought these fish were surface-minded and were mistakenly thought sick and dying. I personally netted several of these fish and I found that they were sick. They had a very bad odor, were slimy, and had large red sores over all their body. I would be afraid to eat one of them.

The Conservation Department is a great organization for us to have. Without it, our fish and game would be very scarce, but for some reason it seems Lake George has been forgotten. We see many other lakes and their history but seldom anything about Lake George in THE CONSERVATIONIST.

About eight years ago, our bass all but disappeared but still today our bass season is the same length of time and the limit is the same. That doesn't seem right.

Black bass move to their Winter dens in late September and are found in large numbers in these places. The season does not close until the first of November so anyone knowing where these dens are located can clean the fish out quite fast. It is like finding a deer herd in Winter.

Our northern pike have all but gone but there doesn't seem to be any alarm or interest taken. The screen at the end of the lake is a good measure but I don't believe this is going to be the solution.

The salmon came on good at first but are rapidly disappearing as was proved by the netters in the Fall. All there seems left is a few lake trout, which are stocked each Fall. There must be some answer to what is wrong with our lake, or is it neglect? I cannot think of a better lake for all-round fishing than Lake George, but it is slowly dying as far as fishing is concerned.

Frank J. Dagles, Bolton Landing

• *Over the years, specimens of lake trout such as you describe, have been checked for known fish diseases at our Rome Laboratory. In all cases, no cause for death could be attributed to fish diseases. I do not know what the specific cause is for the poor condition and red sores on the trout you netted. However, from all available information to date, there is no data to indicate any large numbers of such fish in Lake George in the Spring. I would be glad to cruise the lake with you this Spring if you feel other than a few of the surfacing lake trout are in the condition you describe.*

I imagine THE CONSERVATIONIST *magazine would like to mention something about all lakes and streams in all issues. This being impossible, they feature lakes and ponds as time and space permits. Nonpareil Lake George needs no introduction to readers of* THE CONSERVATIONIST. *It is interesting to note that Lake George was featured in the April-May, 1947 issue of* THE CONSERVATIONIST *magazine. As the magazine was started in the Summer of 1946, Lake George was one of the first. Also from time to time over the years, various anecdotes have appeared pertaining to this lovely lake.*

As you know, in general, the open season for black bass is July 1 through November 30 for most of New York's waters. In Lake George, the open season is from August 1 through October 31, some two full months shorter. Closure of the season during part of September and October would leave little better than a month's open season for this species. While northern pike are present in Lake George they are apparently not numerous. This species maintains itself by natural reproduction in suitable habitat. Lake George is basically a cold water type lake and not ideally suited for producing northern pike as is Oneida Lake, Black Lake, etc.

Much work has been done concerning the landlocked salmon in Lake George. For the past three years substantial numbers of stocked lake trout have been marked for future identification. Although Lake George has been subjected to a tremendous increase in fishing pressure since 1946, the lake continues to provide remunerative angling for many fishermen.

You can rest assured the Conservation Department is vitally concerned with fisheries problems in Lake George as well as other phases of conservation under the Department's jurisdiction.—Robert G. Zilliox, District Fisheries Manager, Adirondack Fisheries District

Fungused bait

Dear Sir: I have a camp on South Bay, Lake Champlain. About the middle of November, I put my bait in for the Winter's ice fishing. I have a complete tank which holds about 500 gallons. This is fed by a spring's continuous running water. The water temperature change in Winter and Summer is very little. The bait keeps very well until April. Then they seem to get something like a fungus on the dorsal fin and across the back. Then they die. As soon as this starts, I let them all out, back in the Bay.

Is there anything I can do to prevent this and keep what bait I have left through the Summer?

Charles W. Foster, Troy

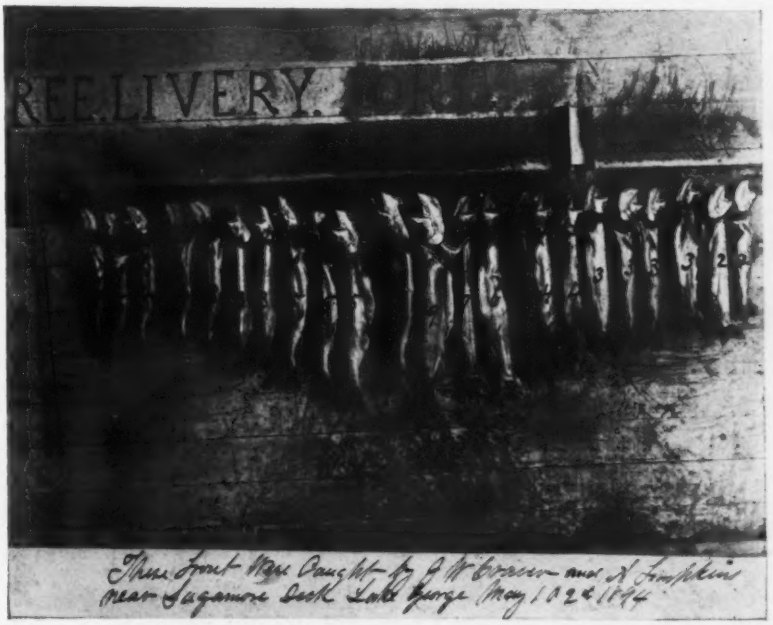
• *Loss of bait minnows from fungus is frequently reported. However, healthy fish are rather resistant to this type of infection. Also, your cold spring water would tend to suppress fungus which spreads by spores and more rapidly in warm water.*

All in all, you seem to be doing well if you can keep bait minnows from November until April in your tank. It is possible that some of them may become weakened or injured as dipping out bait tends to disturb the others and causes them to strike the sides of the tank. I would suggest making every effort to avoid injury, also to destroy any infected fish at once.

It might help also if tank is drained and sterilized with solium hypochlorite, (1:10,000 solution) previous to use for holding minnows. This might not do much good if any fungus spores come in with the spring water on the minnows. Dipping the minnows for 10 seconds in malachite green (1:15,000 solution), 1⅛ ounce in 15 gallons of water is recommended ("Propagation of Minnows and other Bait Species", *Circular 12, U.S. Fish and Wildlife Service, 1948) if infected minnows are being placed in holding tanks.*

Cutting down the density somewhat may also help prevent loss. If you do have trouble with fungus, however, it is better to destroy the bait minnows rather than let them loose as there is a chance of further spread of fungus among wild fish.—John R. Greeley, Chief Aquatic Biologist

Old Timers



An old timers' catch of "lakers" from New York's Lake George. Picture submitted by Geo. McIntyre, Troy

White eel

Dear Sir: I enclose a photo of a white eel caught in the Delaware River by Peter Kammerer, Port Jervis.

The eel is mostly white with the exception of the head and neck which is black. The eel is about 20 inches long and about a inch in diameter. The eyes are a light brown color; not pink. The appearance of the eel is like one that has been skinned but still has the slime of a regular eel.

William H. Wilby, Game Protector

Bureau of Boilers

Dear Sir: Each and every one of us labors under the impression that what we are doing is of the utmost importance to the world. THE CONSERVATIONIST has carried articles belaboring the unthinking mass of people who apparently refuse to practice common sense rules to conserve our natural resources.

This is good and it is my sincere hope that more and more people might be influenced by your ideas. However, there are other professions that have certain principles and codes that are just as worthy of *your* consideration. For instance, the practice of good engineering principles is just as much a subject of conservation as the handling of a match in the woods. Men's lives and property are at stake when these principles are violated.

In your December-January issue, the article entitled, "Cedar Oil," stated that, among other things you need, "a beat-up old boiler" and "some old pipe." Now a "beat-up old boiler" is nothing to play with and it is only safe when it is shut down with no fire under it. I presume that the boilers shown in the article operate under very little pressure, but unless the appliances are in good condition, accidents are always possible.

Most people have a certain respect for electricity, but I assure you that anyone who has been through, or inspected, a boiler explosion develops a healthy regard for steam. The joker with steam lies in the words "per square inch" which means that a boiler operating under only 2 pounds of pressure and having 1,000 square inches of surface has one ton working to tear it apart. This does not take into consideration the expansive force of steam which comes into action when the pressure is suddenly released.

Like a rifle, steam or air under pressure is not fooling. Both follow well known laws and will always react in strict accordance with them. Carelessness or ignorance in their use can end in disaster.

New York State supports a Bureau of Boilers staffed by men who know these boilers and who enforce the State Boiler Code. Please, gentlemen, consult this agency before making rash statements about "beat-up old boilers."

William A. Page, Old Chatham

• *We'll call it to their attention.—Editor*

Bats

Dear Sir: As one of your CONSERVATIONIST'S most avid and thorough readers, I've been hoping to see an article about bats. Can you tell me anything about the migratory habits of the bat?

During the warm months of the year, I'm convinced that I have the monopoly on the central New York bat population at my tree farm in Erieville, Madison County, where they inhabit both my barn and garage, across the road from my home.

However, this past week, I was very much surprised to find one in a room of my home that had been unheated all Winter and had been recently cleaned. It looked like a brown mole, was dormant, but breathing. Do you agree that this is rather unusual? I shall be most interested in knowing.

Victor Levine, Erieville

• *Thank you for your letter concerning bats. An article on bats did appear in* THE CONSERVATIONIST *for December-January, 1953-54. It was illustrated in black and white and, admittedly, was very brief but I think will give you answers to some of your questions. A reprint of the article is enclosed.*

I would suspect that the bat you found was probably the little brown bat since they are the most common ones encountered in most localities of the State. This species tends to become dormant during the Winter rather than migrating south as some of the other species do.—H. Wayne Trimm

"Row, row, row your boat"

Dear Editor: Perhaps I can cast some light on the problem confronting Larry Judd, of Rochester in relation to "Raquette Trout" in the "Letters to the Editor" section of the recent D-J issue of THE CONSERVATIONIST.

Larry states in part: "For the past 30 years we have fished Raquette Lake after ice-out with fair to good success. However, the last three years we have drawn a blank. Always before we could catch as many or more trout with streamer flies and flatfish as the copper line fisherman. However, this changed about seven years ago and we saw a lot of light tackle being used, similar to our own method. They tell us the Department gets its usual number of lakers for stripping in the Fall. If that is true, where do the trout go in the Spring? They sure aren't where they used to be."

This is an exact duplicate of our problem in Seneca Lake, where light tackle is used in the shallows along shore in the early Spring and perhaps this same situation confronts seriously-minded fishermen right across the nation.

The trouble stems from a disease among fishermen mostly, recognized in medical circles as Outboard Motoritis, which is very contagious and nearly every victim who gets bit with the motor fever virus suffers from a reckless throttle.

There was a time during the peaceful rowboat era when fishing was a challenge of skill but since the motor virus epidemic bit innocent souls, it is now a bigger challenge of skill to outsmart the competition.

When these motors first started blasting some of this fabulous, light tackle, shoreline fishing in the early Spring for lake trout and rainbows and again in the late Fall for big bass, my neck hackles would stand right on end, because just one such episode spelled "Amen" as far as the fishing was concerned. However, I learned to work around these fellows, at odd hours or rough, stormy weather and although the environment isn't as pleasant, yet the fishing is just as productive. Furthermore, I'll gamble that because of these instruments, game fish populations have not only increased but many of the bass, lakers or rainbows that would have been victims in a quiet environment are now nibbling on our creations and the rest are dying of old age.

Now, before some of you outboard motor fans read this and develop a case of high blood pressure, I hasten to offer my apologies. Actually, you fellows have preserved so darn many lovely fish by penalizing your own fishing and that of your neighbors, for a few of us antique models who perform in solitude, that I'm not only going to apologize, but to further show my appreciation, I offer my sincere congratulations to all the members of your fraternity for methodically and systematically using one of the most potent tools in conservation for the prevention of cruelty to fish.

In conclusion, many of my friends and neighbors who are suffering from the motorvitis disease, are severe critics of our "contented cow" theory but since their fish bags are pure and comparatively free from that tantalizing aroma emanating from a well-used bag, I prefer to stick to that popular phrase by the post hole salesman: "You can't beat success."

John F. Woodhull, Wellsburg

Allegany deer loss

Dear Sir: There has been some question here in Cattaraugaus County about a newspaper report that appears in the paper every year just about this same time of the year. It has been reported for the past five or six years that a survey has been made in the State Park and an estimate of 600 deer have died each Winter from starvation. Who makes this survey and where is it made? We know that the Rangers do not and they say that the Conservation Department does. The natives around the Allegany State Park feel that this is not a correct estimate by any means and yet who can dispute it if we do not know where this figure comes from?

Walter Bloom, Salamanaca

• *The Rangers or employees of Allegany State Park make surveys each Spring or early Summer to determine the number of deer dead in the woods. Of course, it is not possible for them to survey all of the park area or all of the Winter deer range in the park. They do survey sample areas of deer range and count the dead deer located. Using the area covered by these surveys, they calculate what percentage of the deer range in the park has been surveyed. If they have surveyed 25 per cent of the range and found 100 dead deer, they estimate that 400 deer would be found if the total area was surveyed.*

I know that these surveys are made because I have seen maps marked with the location of each dead deer found and the areas surveyed. I have taken two different groups of more than 75 sportsmen on field trips in this park to show them the overbrowsed condition of the Winter deer range and the carcasses of deer that have died of starvation. On all three trips we have inspected the maps and records secured by park personnel of the wintering areas and dead deer found.

I have received from the Executive Secretary of Allegany State Park the estimated number of deer that were dead in the park each Spring for many years. They are as follows:

Year (Spring)	*Estimated Total Losses*
1958	*150*
1957	*400*
1956	*200*
1955	*650*
1954	*200*
1953	*250*
1952	*750*
1951	*300*
1950	*350*
1949	*240*
1948	*350*
1947	*400*
1946	*300*
1945	*700*
1944	*500*
1943	*550*
1942	*250*
1941	*350*
1940	*500-800*

—C. W. Severinghaus, Leader,
Big Game Management Investigations

Lost island

Dear Sir: What happened to the island in Lake Luzerne? It's still there, in case you want to know. I saw it Saturday. (See your map on Page 33 December- January issue.)

Mrs. W. D. Egnor, Schenectady

• *I will be darned if I know what happened to the island in Lake Luzerne, but we are certainly pleased to learn from your note of January 14 that it is in as good a shape as ever despite the shabby way in which we treated—or failed to treat it on our map of the lake.*

Maybe this is one of the fabled Atlantis situations of the sunken kingdom of the sea.—Editor

Tagged trout

Dear Editor: We are pleased to report a return of more than 33 per cent to date, on 900 jaw-tagged 9-inch brook trout released in five non-State stocked streams in the Harlem Valley watershed of Dutchess County. These fish were purchased with surplus funds from the Dutchess County Federation of Game Clubs' pheasant raising program and distributed by the Harlem Valley Watershed Committee.

The brook trout were jaw-tagged at the hatchery with the help of John Gould and his team from the Poughkeepsie regional office of the Conservation Department. In order to stimulate tag returns, a raffle was planned for the return of the first season and posters were put up to this effect at stream access points and stream banks. We also had numerous write-ups in the local papers. This resulted in a season-end return of 302 tags from the trout that were released in early May of 1958.

However, in spite of what we considered an active campaign to recover the tags, there were many cases of tag destruction and a general apathy about tag returns. We wish sportsmen would become alerted to the importance of co-operating with all such projects in hunting, fishing and conservation.

Wm. P. Smith, Jr., Chairman,
Harlem Valley Watershed Committee,
Wassaic

"Worms"

Dear Sir: Today while cleaning some Lake Champlain frost fish that were brought from Port Henry by a friend of mine, I noted the enclosed specimens. Unfortunately, I did not notice these until I saw one move on the paper with the entrails, but I believe they were found internally. They appeared to me to be small lampreys, from the shape of the mouth. Several were found to be alive and quite active after I discovered them.

I thought perhaps you might be interested in identifying them. I hope they are not the lamprey that are in the Great Lakes.

C. K. Bieber, Alplaus

• *In reply to your question with regard to "worms" you found on smelt from Lake Champlain, these actually are not worms, but leeches of the genus* ichthyobdellidae. *These leeches which are common parasites on the smelt of Lake Champlain appear to be nearly, if not quite, harmless to the fish and certainly are quite harmless in every way to humans. —C. W. Green, Chief, Bureau of Fish*

Shavertown panther

Dear Sir: I read with great interest the letter in the last CONSERVATIONIST regarding a black panther and written by A. M. Curran, Sayville. Of course, everyone will laugh. They first did at me, back in 1934-35. But I, and now also my wife, and two daughters and certain other reliable persons, believe Mr. Curran, implicitly.

Here comes my tale. Way back in the '30's, one warm Spring morning I first saw him (or her). Between fifty or sixty feet away, black, bright yellow-eyed and slinky, with long, short-haired tail almost as long as his body. He eyed me quietly a second, as I did him, then grabbing the foreleg of a deer, or Jersey deacon calf, he had been feeding on when I came over the stone wall upon him, he slid over the wall away from me and out of sight.

I do not need Mr. Curran to describe the incredulity of one and all, for I endured it. Three times I saw the critter thereafter, before anyone else saw it. Then my wife happened to be with me one day and she, whose veracity is more highly regarded than my own, also saw it. I had quite a job to get her to look in the right direction in time, but she glimpsed it as it was leaping through the tall grass and out of sight. She was nearer than I and the glimpse she got was unmistakable.

Since then it has been seen by hunters, two of my three daughters, my eldest daughter's father-in-law and a few excited passers-by. I never saw but one individual, but others have claimed to see one large one accompanied by at least two smaller ones, all larger than a big house cat.

All this has been quite some time ago. I have heard of no one seeing it near here for perhaps eight or ten years. But reports have come of seeing one near Andes, Perch Lake and other nearby places within a 10-mile radius.

I never sighted the thing more than five times myself, and then within a half mile radius of where I first sighted it, back in 1934. I was twice within 100 feet of it and never saw it act frightened, alarmed or show any signs of belligerence. Just quietly and quickly slunk out of sight. By the shortest possible route. It was a black panther. I have seen them in cages and parks and an escaped black leopard *it just was not.*

Go ahead, smug conservation know-it-alls, laugh. We expect you to.

Leland Titch, Shavertown

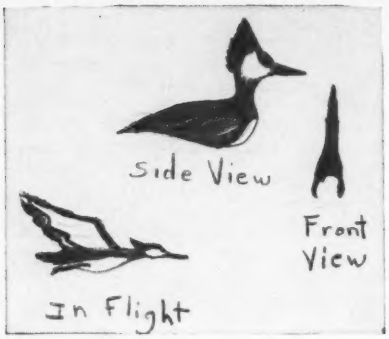
• *Well, we're grinning a little.—Editor*

Catskill eagles

Dear Sir: On the chance it may be of interest, I saw four bald-headed American eagles from a moving Erie Railroad train, Tuesday, Jan. 27, 1959. Two between Port Jervis and Shokan flying low over the Delaware and two between Callicoon and Hancock, one standing on ice watching the Delaware and another flying low nearby.

The first I had seen hereabouts in a *long* time.

George E. Judd, Cannonsville



"No head at all"

Dear Sir: Could you help me with a problem? On the lake where I live are ducks. They are strange-looking and I have never seen anything like them before. They are black and white undersides and underwings. They have white cheek patches and a very high crest. They are very small, about 12 inches long. When they look at you they seem to have no head at all. Their heads are very narrow. Their beaks are very sharp and pointed. They are diving ducks and stay under water for about fifteen to twenty seconds at a time. They are very shy. When they fly their wings make a whistling sound. They fly much faster than the mallards on the lake and quite low unless they are frightened. The females are brown and look like merganser hens only smaller. They are new-comers to the lake, only being here the past Summer. Enclosed is a sketch of a male. Thank you.

Judy Brown, (12), North Babylon

• *Your description and sketches of the "new" duck are very good and leave very little room for doubt that the birds are hooded mergansers.—Editor*

Still no

Dear Editor: I read your article on cedar oil distilling in the December-January, CONSERVATIONIST. I was completely surprised and interested to learn of this industry in New York (although I am a native of New York State), and I had plans of starting my own still on the 14 acres my wife and I own in Missouri; in fact, half way through the article I had mentally constructed such a still, until I read the last sentence: "Don't set up in a red cedar stand—you'll go broke"; which is, of course, why I am now writing. This industry has completely intrigued me, and I would like more information on it if you could supply it. In our section of Missouri, red cedar "grows like a weed" and a large percentage of our property is covered with small red cedar.

I want to know particularly if red cedar doesn't produce sufficient oil or what, as this would be an ideal way to get rid of some of the red cedar and still realize something from them.

Any information you can give on this will be greatly appreciated.

G. W. Fitzgerald, Norfolk Va.

• *No oil! Try pencils and cedar chests instead.—Nick Drahos*

Long range bass

Gentlemen: This is to inform you of a recapture of a bass tagged NYCD 5B78. The fish was caught in the St. Lawrence River at Repentigny around the Boucherville Islands, August 5, 1958. Measurements taken here in our laboratory are: 275 mm standard length, 32 mm fork length, 335 mm total length (13.2 inches) and it weighed 520 grams (eviscerated).

The angler was R. P. Grandbois, 1433 Theodore, Montreal, Quebec. Information about this fish would be much appreciated.

Gerard Leduc, Biologist,
Quebec Biological Bureau,

• *We were very interested to learn of the recapture of a bass tagged NYCD 5B78, which you reported as having been caught in the St. Lawrence River at Repentigny, Quebec, August 5, 1958 by R. P. Grandbois of Montreal.*

Back in the early 1950's we made some studies on the smallmouth bass in the section of the St. Lawrence River, between Ogdensburg and Massena. Several hundred adult bass were netted, tagged and returned to the river in this area. Subsequent angling recaptures were made, for the most part, within four miles of the point of release; while the furthest point of recapture was 16 miles away.

Additional studies of the bass were begun in 1957 in order to gain more information on which to base general management policies and to evaluate some of the effects of the power and seaway development underway in this section of the river. Each year the State Fish Hatchery at Ogdensburg nets adult bass from the St. Lawrence River to use as breeders in the hatchery ponds. In 1957 some 384 of these bass were tagged and returned to the river about 10 miles upstream from Massena, the area from which they had been originally netted. This was at about the midpoint of what is now Lake St. Lawrence, the power pool which was created when the river was impounded for the first time on July 1, 1958. During the 1958 fishing season only 5 of the bass tagged in 1957 were reported caught. Three of these fish were caught just below Iroquois Dam (about 10 miles upstream) from point of release, one near Massena (10 miles downstream) and one near Summerstown, Ont. (35 miles downstream). Compared to the rather local movements which the bass made under the old river conditions in the early '50's, these returns indicated a considerably wider scattering of the bass population in the new Lake St. Lawrence area.

The bass which you reported was one of the group tagged and released on June 18, 1957. It measured 12.5 inches total length when released as compared to 13.2 inches when recaptured. Scale samples taken at time of tagging showed that this fish was five years old. Of course, the most unusual feature was the fact that it had travelled about 115 miles downstream before being caught—the longest recorded movement of any bass that we know of in the St. Lawrence River region.—Donald G. Pasko, District Fisheries Manager

Cut off

Dear Sir: I was shocked, pained and surprised to see that fourth cover of your last issue was "Courtesy New York State Museum" with no mention of Louis Agassiz Fuertes, the greatest bird portraitist of all time. In fact, you cut off that portion of the picture, the original of which bore his signature.

I note, however, that you gave full credit to my old friend, Clayt Seagears, for his third cover, which is of course humorous enough to lighten the whole issue.

Percy V. D. Gott, Goshen

• *Fuertes fell prey, we're sad to say, to the necessity to crop some of the plate to permit room for the mailing label. We hope that he and you will forgive us.—Editor*

Ash die-off

Dear Editor: In Seneca County, along the shores of Cayuga Lake, the white ash has been dying on our property and that of the adjacent Boy Scout property for the past eight years and there is an ever widening circle of dead and dying ash, many of a foot or more in diameter. There is no evidence of any fruiting bodies and the trees look healthy but gradually the foliage dies from the top down and finally the tree succumbs. There are water sprouts and epicormic branches, but these too soon die. The wood is not affected at first, but on some 30 trees which the Scouts and I cut this Winter the logs, although otherwise perfect, were rejected by a local sawmill man as not sound. This is a real loss as in these parts ash brings at least $30 per M on the stump. Now it is only usable as firewood which is a pity as white ash is none too plentiful.

Ash of all ages are affected and there is no ash reproduction under the dead and dying trees. Only pincherry, sumac and other "weeds."

My purpose is to stimulate research into this disease more than has apparently been done and if possible some cure other than "cut the dead and dying." Our local farmers are fully aware of the ash dying and have asked me what can be done about it. I shall be glad to help in any way I can—this is no light matter as given time, our ash may go the way of the chestnut.

A. B. Recknagel, Ithaca

• *The records in the Bureau of Forest Pest Control indicate knowledge of this condition since about 1947. Since that time, many samples of dead ash wood have been collected and distributed to the State Agricultural and Forestry Colleges and the United States government for diagnosis. Very little definite information pertaining to the cause of the ash mortality has been forthcoming from our endeavors to encourage research. Dr. Donald Welch of Cornell advised us in 1951 that he had observed this dieback of ash as far west as Michigan. He further stated that cultures of dying ash near Ithaca had been made and that no disease organism was found.*

I share Mr. Recknagel's concern and heartily agree that research aimed at the control of this dieback condition is warranted.—C. J. Yops, Superintendent, Bureau Forest Pest Control

Campsite record book

Dear Sir: After completing my third year as Campsite Caretaker at Sacandaga Campsite, I was reviewing my past season's records of the camping season. I kept a separate record of the States and Canadian registrations that camped at Sacandaga Campsite this past season.

I was amazed at my totals. We had 163 out of State campers, 22 states represented and 4 provinces of Canada.

New Jersey led with 42, Massachusetts had 23, Pennsylvania had 16, Ohio had 9, Michigan had 7, Maryland had 5, Rhode Island had 4, Connecticut had 4, 2 each for Delaware, Illinois Virginia and New Hampshire, 1 each of Maine, Washington, Oregon, Vermont, Texas, Alabama, Missouri,, Indiana, Kansas and North Carolina.

Canadian: Ontario 26, Quebec 7, Alberta 1 and New Brunswick 1.

This record might be interesting to your readers that there is no discrimination. Campers from other states are welcome to camp in New York State campsites.

It has been my pleasure to serve these people and to make their stay a pleasant one. May next year be bigger and better for all. Enjoy your vacation in the great outdoors of the Adirondacks of New York State.

Hope to see you all next year.

Benjamin A. Bartholf, Sr.

Non-resident pistols

Dear Sir: I have noticed in a past issue of THE CONSERVATIONIST that it is legal to hunt deer with a pistol in the Northern Zone counties. Being a "gun bug" myself and shooting in first place (Class B) competition, hunting with a pistol would appeal to me.

My questions are these: What are the requirements as to caliber of weapon used and is either an automatic or revolver permitted? The big question concerns the N.Y. State Sullivan gun laws. Does a N.Y. State big game hunting license permit you to carry and/or transport the pistol in the woods or on the highways legally in N. Y. State? What I have in mind is being stopped on the highways in N. Y. State during a routine inspection, of which I have been in twice in the last ten years, having the inspecting officer find a pistol in the car, and then I am in plenty of trouble, besides forfeiting the pistol. If the N. Y. State big game license does not grant that privilege how does one go about securing a legal right to have the eapon in one's car or on his person while hunting. I am not after a permit to carry such weapon on the person any time in N. Y. State; only the right to transport between my home and the hunting territory.

C. N. Hicks, Hanover, N.J.

• *It is legal to hunt deer with a pistol or revolver in sections of New York State where hunting with a rifle is permitted provided an individual is properly licensed for hunting and for possession of a pistol or revolver. Herein lies the problem for non-residents, such as yourself.*

We contacted the New York State Police and they advised that New York State does not recognize licenses or permits of other states for carrying concealable weapons such as pistols or revolvers. Section 1897, of the New York State Penal Law, provides that a person must be a reisdent of the State or have his principal place of business within the boundaries of the State, or be principally employed within the State to be eligible for the issuance of a pistol or concealable weapon license. Unless you can qualify under one of these categories there is no way you can legally possess a pistol or revolver when in New York State.—Earl A. Westervelt

Panning gold

Gentlemen: A recent television adventure program had to do with the panning of gold. As a result, I started wondering whether there has ever been any gold found in New York State and if so where? Has it ever been found in any quantity?

Eugene F. Seddon, Jr., Rush, (N.Y.)

• *The only authentic occurrence of gold in New York State was in a glacial boulder found in Peekskill. This may have been transported by the glacier from some place in Canada. I have seen a small particle of gold allegedly panned from glacial deposits near Dolgesville, but I cannot be certain that such was the case. There have been many claims of gold found in New York State, none of which has ever been proven. A number of these are described in New York State Museum circular No. 12 'titled,* "The Prospects for Gold Discoveries in New York State," *by D. H. Newland.—J. G. Broughton, State Geologist*

Rabbits for dinner

Dear Editor: Enclosed please find a photograph made by my father, the late Floyd Wendover, who for several years served the Conservation Dept. faithfully as a Special Game Warden in Putnam County.

This black snake was removed from one of the pheasant pens on our game farm, where he had swallowed these four rabbits shown—and of course, was so fat he was unable to get back through the wire enclosure. Dad had to slit the underside of the snake in order to remove the rabbits. Maybe this will settle the question (Dec. Jan., 1958-59 issue) in Les. Thompkins' mind and confirm Myra Elethorpe's ideas (Oct.-Nov., 1958 issue).

Jeanne W. Greene, Ithaca

What next? Department

Dear Sir: Will you please tell me how I go about to buy one of the little country school houses. Please write back and let me know.

Elizabeth Brown, Richford

• *The purchasing of little country school houses is not exactly up our alley, but we would suggest that once you have found one to your liking, you contact the Town Clerk in that area. He may be in a position to direct you to the proper authority for the information you need; probably the school board of the district in which the school house is located.—Editor*

Spruce gum

Dear Sir: Will you please give me the story on spruce gum; how it was harvested, cleaned, processed and made soft?

Years ago, about 45, I can remember an old Indian who gathered the raw gum; he hunted with us in the Fall. I asked him what he did with it and he said he cleaned it and sold it to the Adirondack Spruce Company of Boonville or Poland; I forgot which. Is there still a market for it? I can remember it being put up in small boxes and chewing some but it was soft and easy to chew not like the raw gum that changed color. As you chewed it, it gave you that hungry feeling.

P.C.H., Utica

• *There was a man named Isaac Daniels who had a spruce gum factory in Boonville in the early 1900's. He moved first to Gravesville and then to Poland. As I recall, he came here sometime in the 1920's and constructed a building about 20' x 30' for his processing plant. The raw gum was heated by steam in a large vat and bark and other impurities were skimmed off the top as they came to the surface. It seems likely that something must have been added to produce a more volatile form than would result otherwise. The finished product was in the form of irregular droplets which were packed in small boxes similar to those in which safety matches used to be packed. I am told that these droplets were formed when the gum, in semi-liquid state, dropped through a sort of seive. As I remember the product, it did not differ greatly from natural spruce gum. It was hard and brittle and a real "jawbreaker."*

I am told that Mr. Daniels' son, James Daniels, is a resident of Utica and anyone interested in the history of this industry could probably get the information from him.—E. W. Blue

Credits

First cover, pages 4, 5, 14, 17, 23, 24, 25, 30, 31, 33, 4th cover, H. Wayne Trimm; 2nd cover, Pauline W. Kruetzfeldt; 3, 8, 12, 13, Earl McGuirk; 6, 7, Nick Drahos; 9, 22, Roy Irving; 10, Robert Leo Smith; 16, Olga Lindberg; 20, 21 Alfred W. Eipper; 28, Ellen Edmonson, A. C. Petty; 29, 36, Petty; 37, Paul Smith's; 38, Dave Haskell, McGuirk; 39 McGuirk, Drahos; 40, John Schempp; 41, U.S.D.A.; 3rd cover, Clayt Seagears.

Save Your Water for a Rainy Day

Some Things Everybody Should Know About Water

PURE FRESH water is, of course, not only essential to life but also to our way of life.

Our basic supply comes from the sky, mainly as rain and snow.

The sky drops as much water on us as ever but one trouble is that it doesn't always drop it at the right time and place.

Another trouble is that the available water must be divided among more and more people. *(It is predicted that the 1950 U. S. population of 150 million will soar to 217 million by 1975.* New York State's population increased 104 per cent from 1900 to 1950.)

More shortage trouble results from the fact that the daily use of water per person is far greater than it used to be—and it is rising steadily. (The per capita water consumption per day in 1905 was about 25 gallons. It was more than 100 gallons in 1959. The reason: Increased use of home piped water systems, air conditioning, car washing, lawn sprinkling etc.)

Also, America's mushroomed industrial growth has sponged enormous quantities of the water supply. So has modern agricultural irrigation. (Of the daily average of 225 million gallons of water pumped from ground wells on Long Island in 1952, about 138 million gallons went into domestic use, 80 million were used by industry while agriculture used the remaining 17 million.)

Not only are people, factories and agriculture using more pure water by *direct* consumption but much of the time they are destroying *an almost equal amount by pollution.* Instead of getting better, the national pollution situation seems to be getting worse despite a few scattered examples of adequate control. This is probably because industrial progress is flushing out new kinds of wastes of such complex potency that it takes a long time to determine the ultimate degree of pollution.

There's still another enormous waste of water which Man can do something about. It is the flood water which runs off the land and out to sea before it can be stopped and stored for subsequent use.

An average of 4 3/10 trillion gallons of water falls on the U. S. every day.

Of that amount, 3 1/10 trillion gallons goes back to the sky by evaporation and by the breathing and perspiring of plants and animals. (So great is *evaporation* that 25 million gallons of water has been known to evaporate from a 4,200-acre city reservoir *in a single day.* The amount was equal to the amount used by the city. Plants *transpire* untold billions of gallons daily. A single apple tree can take from the ground and give off through its leaves as invisible vapor four gallons of water per hour! That maple shade tree on the front lawn normally "breathes" out in one Summer day an amount of water *four times greater* than the per capita consumption in the house!)

This leaves 1 2/10 trillion gallons of the original daily replenishment. Of this amount, half of it (600 billion gallons) runs off unused as flood water or as polluted water.

So we end up with a daily *usable* supply of 600 billion gallons.

Today this is adequate (provided, of course, we had it at the right time and place) but tomorrow it won't be, according to the estimates of engineers working with the Public Health Service. This is the picture:

In 1900, we used 40 billion gallons daily.

In 1959, we used 270 billion gallons daily.

In 1980, it is predicted that we will use 600 billion gallons—or an amount now equivalent to the daily U. S. supply!

The rest of the way seems to depend on finding new supplies of fresh water. In some areas, we need new supplies right now. There's at least one obvious answer: Cut into that wasted 600 billion gallons by *controlling pollution and by trapping the runaway, flooding raindrop, especially where it falls.*

In New York State the picture appears better than average, mainly because of the Great Lakes, the Finger Lakes, the St. Lawrence River, Lake Champlain and two huge forested catch basins—the Catskills and Adirondacks.

The important Water Power and Control Division (Commission) in the Conservationist Department says in general that there is ample good water in New York to last many years although in some areas the capacity of existing water supply works may not be adequate to meet further needs or even present peak demands. (Peak demands normally occur in July and August when it is hot and dry. Then everybody gets out the hose, air conditioners and showers work overtime. Unfortunately, that also is the time when various water storage facilities are lowest and surface storage evaporation is highest.)

The Commission's water engineers say that the statement of adequacy of available water is based on the assumption that the State's water supply demands will *not* increase at a rate greater than normally might be expected and they also point out that today's predictions of tomorrow's water demands may be wrong.

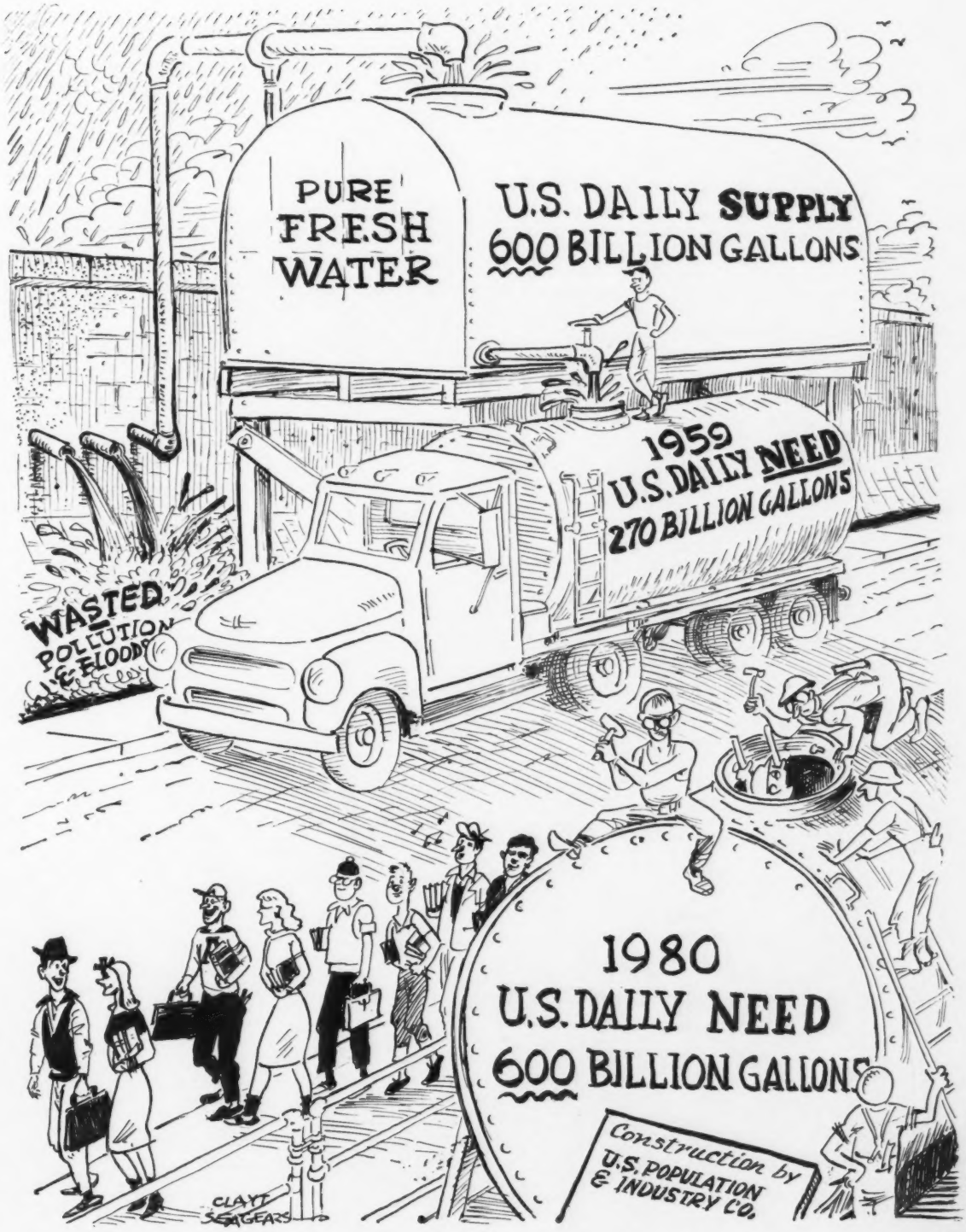
More than 14 million people (about 90 per cent of the population) are served by *public* water supply systems in New York State. The remainder obviously are served by private supply (individual home wells etc.)

The State's 1,019 public water supply systems serve 1,501 communities. Of these systems, 573 get water from the ground (wells and springs) and serve about 2,660,000 people. The remainder take water from surface supplies (lakes, reservoirs, rivers etc.)—although a few get water from both surface *and* ground—and serve the big majority of about 11½ million people.

It would at least be an interesting mathematics problem for classroom use to figure the various costs per gallon of water which runs through the school faucets, based on whether it must be filtered (to remove mud etc.), treated (to remove the germs), pumped, piped, dammed etc., etc. How much would it cost 100,000 people per person per day to pipe 10 million gallons daily by *gravity* from a storage reservoir (costing X$ to build and amortized over X years) 20 miles away vs 100 miles away? How much would it cost to *pump* this water up X many feet for X many miles? How much water evaporates from your community's surface water supply per average day (based on potential evaporation experiments by, let's say the physics class). How much water is used per capita in your community? If you live on Long Island, draw a diagram of how a diffusion well works. Well, what *is* a diffusion well?

Or how about a project to determine whether in the long run it would be cheaper to build pollution-control devices, halt the runaway raindrop on nearby watersheds, take adequate steps to reuse the water (rather than sending it off to sea via sewer and river after first use), use diffusing wells to bolster ground water supplies etc., etc., OR wash hands of the whole thing and leave it for tomorrow—when maybe it'll cost you too much to wash your hands (with good clean water, that is).

—CLAYT SEAGEARS



—*or maybe they never* studied *such problems*

LITTLE GULL
L. 11 inches
Adult, Summer
LESSER BLACK-BACKED GULL
L. 23 inches
Adult, Summer
GULL-BILLED TERN
L. 14 inches
Adult, Summer
LITTLE GULL
Immature
ARCTIC TERN
L. 15½ inches
Immature
BLACK-HEADED GULL
L. 15 inches
Adult, Summer
SOOTY TERN
L. 16½ inches
Adult, Summer
ROYAL TERN
L. 19 inches
Adult, Winter
FRANKLIN'S GULL
L. 14 inches
Adult, Summer